THE OIL WEEKLY

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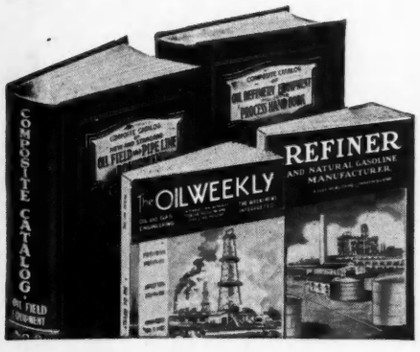

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The Oil Man's Calendar

OCT. 5-7	American Institute of Mining & Metallurgical Engineers, Fall Meeting, Petroleum Division, Plaza Hotel, San Antonio, Texas.
10-13	North American Gas Tax Conference, Tulsa, Oklahoma.
10-14	American Gas Association, Atlantic City, New Jersey.
10-14	National Safety Congress, Petroleum Section, Stevens Hotel, Chicago.
12-13	Indiana Independent Petroleum Association, Hotel Severin, Indianapolis, Indiana.
18	National Stripper Well Association and Oklahoma Stripper Well Association, Annual Meeting, Tulsa.
19-21	Independent Petroleum Association of America, Tulsa, Oklahoma.
20-21	American Institute of Mining & Metallurgical Engineers, Petroleum Division and Industrial Minerals Division, Los Angeles, California.
27-29	Annual Convention, Texas Division, Mid-Continent Oil & Gas Assn., San Antonio, Texas.
NOV. 3-4	American Association of Petroleum Geologists, Pacific Section, Los Angeles, California.
14-18	American Petroleum Institute, (Annual), Stevens Hotel, Chicago.
DEC.	Mid-Continent Oil & Gas Assn., Standing Tax Committees, Dallas.

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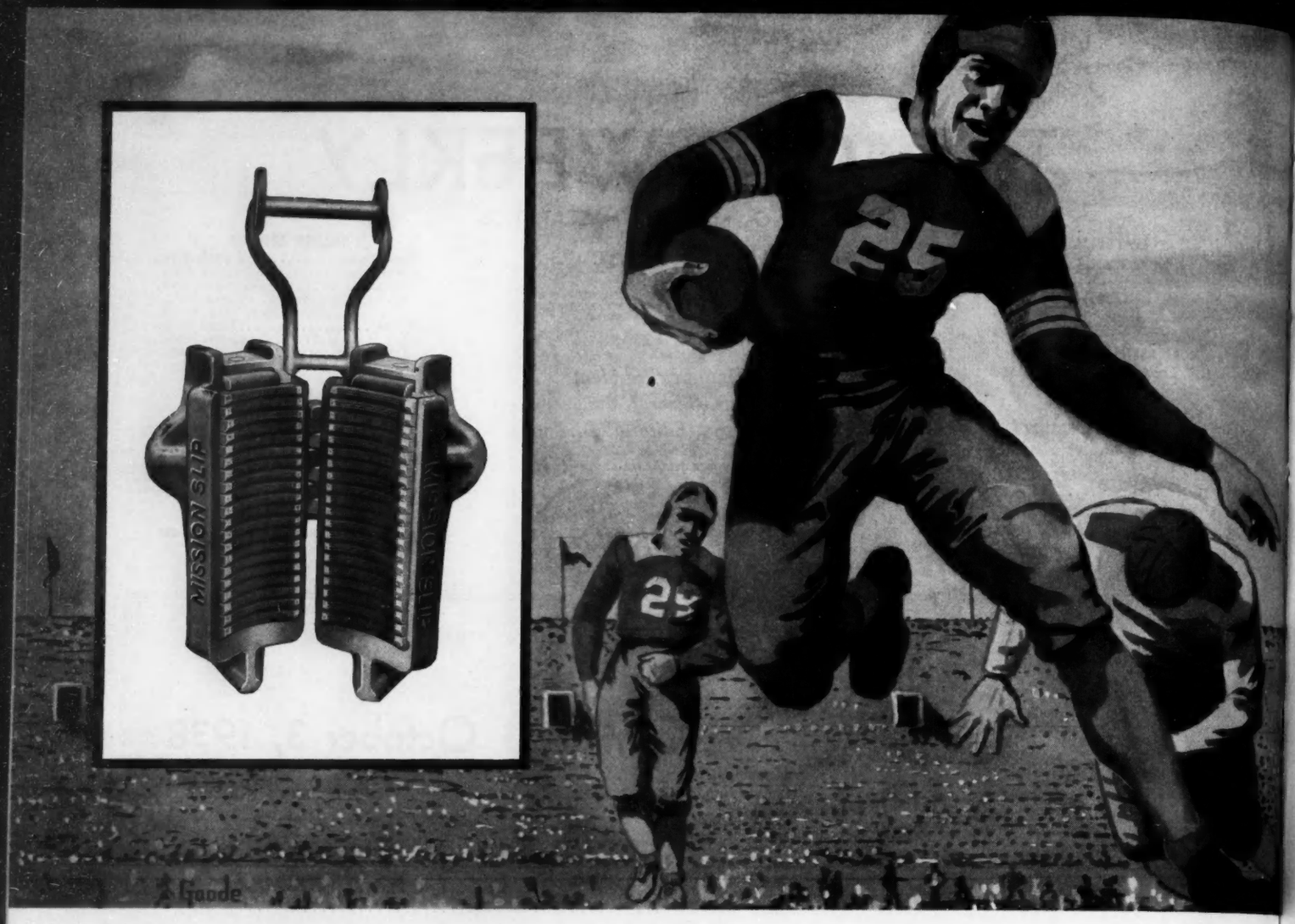

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This Week's Panorama

THE Department of Commerce has attributed to the threats of war the indications that this year has brought a new all-time record of drilling activity outside the United States.

However, the normal growth of world consumption of oil probably has been responsible to some extent also for the heavy drilling abroad. For oil use has been steadily increasing every year recently in practically all countries.

Another cause for increased drilling throughout the world has been the widespread prevalence of the spirit of nationalism in economic affairs, under which nations have put forth special efforts to make themselves economically independent of the rest of the world. Inasmuch as oil is a modern necessity, the nations are striving particularly to develop their own supplies, through drilling as well as through experimentation with substitutes for petroleum.

World Drilling Unusually Heavy

Nevertheless, it undoubtedly is true that the wars and threats of war have been largely responsible not only for the exceptionally heavy exports of crude and refined oils from the United States to other countries this year but also for the unprecedented shipments of American-made drilling equipment to other lands. It is these shipments that furnish the evidence of all-time record drilling activity in the countries outside the United States. (The United States produces the bulk of the world's drilling and other oil field equipment.)

Exports of American-made oil field equipment in the first six months of this year totaled $21,008,415, according to the Department of Commerce, the most ever reported. This total was 21 percent larger than that of the first half of 1937, when shipments amounted to $16,453,988, an all-time record up to that time. The largest six months' total previously was in 1930, when the exports amounted to $15,093,620.

It was pointed out as significant that for the first time in history, the exports of drilling equipment in the first half of this year constituted more than one-half of all oil machinery shipments.

The drilling equipment shipments in the half-year aggregated $12,374,417, approximately 50 percent more than in the corresponding period last year and more than twice as much as the total for the latter half of 1937.

The drilling equipment shipments went to all sections of the world, the report indicated. Venezuela remained the best customer, having purchased $3,471,723 worth of equipment. Colombia ranked second, with $1,544,808 worth of purchases. Trinidad was third, with purchases of $1,240,378, and Canada fourth with $756,961, while other countries to which shipments were made included: Argentina $536,243, Iran $384,361, New Zealand $382,310, Egypt $253,971, British Malaya $252,423, France $179,865, Peru $157,498, Burma $123,562, Czechoslovakia $101,659, Iraq $97,601.

Oil Industry Wages and Hours Good

It probably will be a month before Elmer F. Andrews, federal wage and hour administrator, will consider conditions in the petroleum industry. He is now considering the textile industry, and the tobacco industry is next up.

The minimum wages and maximum hours provided for in the law apply, of course, to the petroleum industry as well as the rest of the nation's business. But the wages and hours in the oil industry are better than those in nearly all other industries, and it now seems unlikely that a committee to represent the petroleum industry in discussing administration of the law will be appointed. However, this question will not be determined until the administrator has taken under consideration the conditions in the industry.

Acquisition by Calculation

Further evidence has accumulated that the Mexican government does not seriously consider compensating the oil companies for the expropriated properties.

Hints were given several weeks ago that the government ultimately might substitute confiscation for compensation as the way to settle the oil companies' claims.

More recently, it has been hinted that the Mexican government might claim that it not only does not owe the oil companies anything, but that the companies owe the government about $20,000,000.

Various estimates have placed a valuation of around $400,000,000 on the expropriated properties. But, according to an article published recently in the *Workers' Bank Review* in Mexico City, this figure was cut to $220,000,000 by the simple calculation of considering the oil companies' profit of $22,000,000 in 1936 as 10 percent of their investment. Then deductions were introduced, including 25,000,000 pesos for back taxes, 50,000,000 pesos for compensation of workers because of the alleged breaking of the labor contracts by the oil companies, and other large sums for various debts and obligations owed by the oil companies. Altogether, according to the article, the deductions bring down to only about 50,000,000

pesos the amount owed to the companies by the government. But, according to the recent Supreme Court ruling and the estimates of the Workers' Petroleum Syndicate, the oil companies owe their workers about 150,000,000 pesos. Consequently, according to the final calculation, the oil companies are indicated to be in debt to the Mexican government about 100,000,000 pesos, equivalent to $20,000,000 on the basis of current rates of exchange.

Some weeks ago the state department of the Mexican government hinted that the expropriated oil properties eventually might be considered as having been simply confiscated. As a prelude to the possible taking of such a viewpoint by the government, an official of the government declared that precedents for such action have been established by various countries in abandoning the gold standard and devaluing the currency. The United States was not mentioned specifically as having taken such action, but the cited measures were described as confiscation of the property of citizens of the countries involved.

Independents Study Proration

The Independent Petroleum Association of America is exepcted to draw an attendance of over 1000 oil men, from every oil producing state, when it holds its ninth annual convention October 19-20-21 at Tulsa.

Among the featured speakers will be Donald Richberg, Washington attorney and former administrator of the National Recovery Act.

It has been indicated that at the meeting the association will place under scrutiny the whole matter of self-regulation of the petroleum industry, with the aim of further strengthening the program of conservation, as regards some phases, although some of the leaders of the group have expressed general satisfaction with the conditions that have prevailed in the industry in recent years.

Automotive Outlook Encouraging

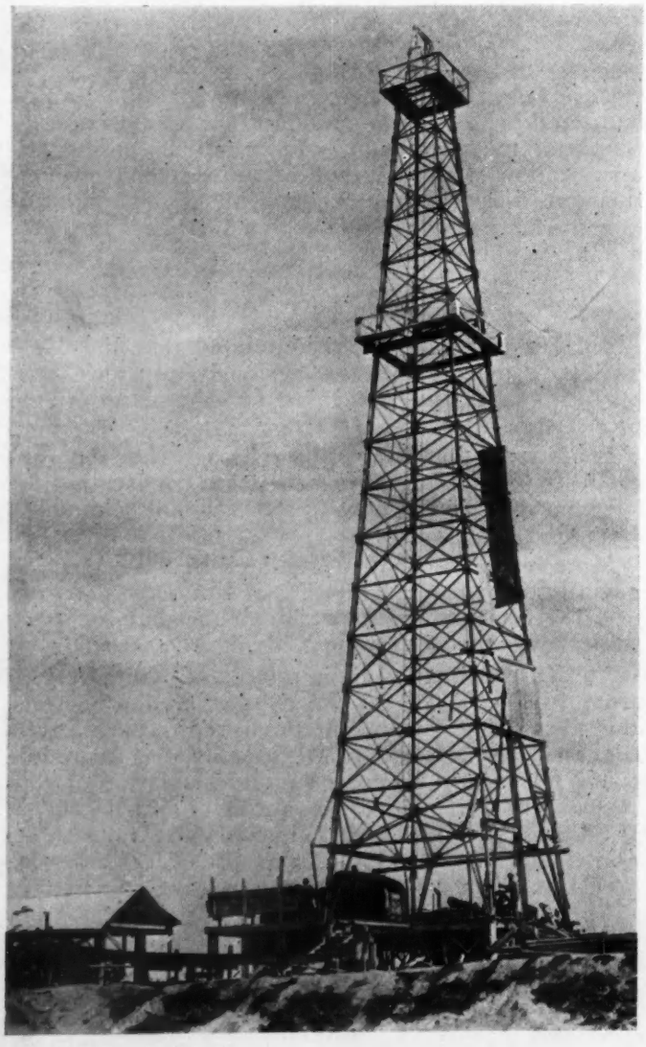
Ford Motor Company has joined other automobile manufacturers in the view that sales and production in their industry will be around 25 percent larger in 1939 than in 1938.

The company expects production of 3,000,000 vehicles in the United States in 1939, compared with about 2,250,000 in 1938.

Such an output, however, still would be below normal requirements, as the industry in the past five years has built on the average 3,700,000 cars annually; and unfulfilled demand at the end of 1939 is expected, consequently, to be over 2,000,000 cars.

For the 1938 output, estimated at 2,250,000 units, would be about 1,500,000 short of the normal requirements, and the 3,000,000 cars and trucks likely to be made in 1939 would be 700,000 units short of the normal needs; indicating a total underproduction in 1938 and 1939 of over 2,000,000 units.

This picture in the automotive field naturally is encouraging for the petroleum industry. Increasing sales of automobiles would bring improvement of demand for gasoline and other petroleum products.



Several important things have been proved by the discovery well of the new Hillsdale field in Garfield County. It moves production limits for northwestern Oklahoma 24 miles in that direction, and proves: (1) a new field of possibly 2500 acres according to surface structure worked out 13 years ago; (2) that structures in the area are not parallel with the Nemeha Ridge, major regional high lying to the east; and (3) that the Wilcox sand not only is present in the region but carries oil.

At the end of last week Champlin Refining Company had shut in the well to prepare for a production test. Bottom-hole pressure has been constant at 2275 pounds on the casing since it was closed in September 23. Flows made previous to that time indicated an output of 500 barrels daily from the second Wilcox sand at 6694-6703 feet.

Mid-Continent Crude Price Structure in Danger

Depressed gasoline prices threaten to pull down crude oil postings in other areas as in Illinois, despite moderate output of wells and refineries

By L. J. LOGAN, Associate Editor

THE past week has brought the most serious threat of a general Mid-Continent crude price cut since that of early May, which was hurdled only through extraordinary curtailment of crude oil production and refinery runs.

This new threat has arisen because of the increased weakness of the gasoline market, which last week brought some apparently panicky dumping of gasoline by both refiners and re-sellers. Whereas gasoline tank car prices rarely are marked down more than ⅛ or ¼ cent a gallon at a time, they were slashed as much as ⅜ cent in single reductions last week, and are now at abnormally low levels.

* * *

Illinois Cut Ominous

Obviously, the crude oil market cannot indefinitely hold up in the face of repeated reductions of gasoline and other product prices, and the general Mid-Continent crude price structure was revealed early last week as being in serious jeopardy, when crude postings were reduced 10 cents a barrel, or from $1.35 to $1.25 a barrel in Illinois fields, at Princeton, Indiana, and in Western Kentucky, effective September 27.

Similar reductions have made in the past several weeks in various other districts, but those earlier cuts were regarded in most instances as being of only local significance.

The Illinois cut, too, resulted in part from local conditions, as production has been increasing rapidly with the development of new flush fields of the area. (The American Petroleum Institute reported an increase of 7550 barrels in the daily average crude oil production in the new Southern Illinois fields in the week ended September 24, the output having jumped to 74,600 barrels daily.)

However, purchasers of the Illinois crude did not place all the blame on the local conditions. They were disposed, in fact, to place the responsibility largely on general conditions in the industry and particularly on the depressed gasoline market.

Those same general conditions also affect the rest of the Mid-Continent crude market, and consequently are a threat also to the established crude postings throughout the Mid-Continent.

Furthermore, the Illinois crude is in direct competition with oils of Oklahoma, Kansas, North Texas, and other districts of the Mid-Continent, being of similar gravity, gasoline yield, and so forth, as well as having a definite geographical advantage in relation to consuming centers of the Middle West.

Oklahoma and Kansas have been losing markets steadily to Illinois since the finding of the new fields of the southern part of the state, and the shifting of the markets naturally will be accentuated by the Illinois price cuts, if similar reductions are not made in the other Mid-Continent districts.

* * *

Gasoline Prices Blamed

Owensboro Corporation, pipe line subsidiary of Standard Oil Company of Ohio, commented as follows on the Illinois crude cut:

". . . reductions in the market value of refined products have been going on now for many months and were climaxed on September 22 by a reduction of another full quarter cent a gallon in the Oklahoma refinery wholesale gasoline price; this has necessitated dropping dealer service station prices still further. The only use for crude oil is to make it into refined products, and crude oil derives its value only from the sale of such products. When their sales prices decline, therefore, the real value of crude oil obviously declines also. . . .

"Dealer and retail prices in Ohio, for example, are today from 1 to 2 cents a gallon below the levels prevailing in the first half of 1937, and this is typical of conditions throughout the Middle West and elsewhere.

"Considering that over 50 percent or about 22 to 23 gallons out of each 42-gallon barrel of crude oil typically is made into gasoline, this means that the gasoline content from a barrel of crude is today bringing at least 20 to 25 cents

a barrel less than in 1936 or the early part of 1937. Price reductions likewise have occurred in respect to the other products derived from the barrel of crude oil, and particularly is this true of the heavy residual fuel oil and asphalt, which residual products constitute about 10 gallons or more out of each barrel of crude. The average prices of these products have declined by about 2 cents a gallon or more as compared with the earlier period. This represents a decline of another 20 cents or more in the value of the products gotten from the barrel of crude. Taking the products as a whole that can be obtained from a barrel of crude, they have declined, therefore, by more than 40 cents as compared with the early part of 1937 when the price of $1.35 (for Illinois crude) was established.

"These reductions in refined prices reflect, of course, both the increased available supply of crude oil in almost all areas and the reductions in demand for refined products. Consumption of gasoline in the United States is below 1937 and the demand for industrial fuel oil and lubricating products this year has, of course, declined extremely with resulting and unavoidable accumulation of excessive stocks and drastic price declines.

"These reductions in the value of refined products have been partially reflected in declines in a number of other crude oil prices. All grades of Pennsylvania crude oil, for example, have declined by more than $1 a barrel since the middle of 1937. Recent reductions of 10 cents a barrel or more have also been reported in East Texas and in various parts of Louisiana, Oklahoma, and other areas."

* * *

Recent Crude Cuts

Districts where reductions have been made and which were not mentioned specifically in the Standard Oil Company of Ohio statement have included the Smackover field, Arkansas, where the posting was cut 15 cents; Lisbon field, North Louisiana, where prices were reduced about two weeks ago 6 to 10 cents a barrel; Jennings, Louisiana, where a new gravity schedule has been inaugurated, involving increases up to 8 cents a barrel for some of the heavier oils and reductions up to 4 cents for lighter oils. Difficulties in the crude markets were reflected also when a major company recently abandoned its new policy, adopted several weeks previously, of graduating prices upward to include crudes between 40 and 50 gravity, and resumed buying them all at the price of 40 gravity crude, in the Texas Panhandle, West Central Texas, and several Gulf Coast fields.

* * *

Basic Conditions Good

While it is easy to explain the weakened crude oil market as having resulted from depressed gasoline prices, there is not any such ready explanation for the gasoline situation itself.

On the contrary, there are various factors now prevailing that normally should bolster the markets for both crude oil and gasoline, particularly the present favorable inventory position of the industry and the current and prospective strict curtailment of crude oil production and refinery activity.

Crude oil production is scheduled to be tightly restricted again in October as in September, under the new allowables promulgated by the leading producing states.

In September the industry succeeded in materially improving the inventory situation, as regards crude oil, gasoline, and fuel oil. In only the first half of the month crude stocks were reduced about 4,000,000 barrels. Gasoline stocks were lowered about 2,500,000 barrels in the first three weeks of September, and in the same period fuel oil stocks expanded only normally for the season, rising about 3,000,000 barrels.

The latest weekly statistics of the industry have shown continuation of the favorable trends of operations and inventories. Crude stocks came down 1,500,000 barrels more in the week ended September 17, although they previously had declined to the lowest level for 15 years. Totaling only 280,945,000 barrels on September 17, the crude inventory was 9.6 percent smaller than that held one year previously.

Crude oil production of 3,251,150 barrels daily in the week ended September 24 was 12,000 barrels a day higher than in the previous week, but it was about 200,000 barrels a day under current market requirements and 11.3 percent under last year's curve.

Refinery runs in the week of September 24, averaging 3,220,000 barrels a day, were down 25,000 barrels from the previous week's rate and were 6.8 percent lower than in the corresponding week last year.

Gasoline stocks were further reduced about 600,000 barrels in a contra-seasonal decline in the week of September 24, as the total supply came down to 68,605,000 barrels. That was only 3,000,000 barrels or 4.5 percent more than the storage of 65,620,000 barrels held at the corresponding time last year.

It is true that gasoline demand does not fully justify even the present inventories, but the stocks are not too far out of line. The Bureau of Mines has estimated that total gasoline demand in October will be 2 percent larger this year than last year.

Fuel oil stocks were increased about 1,000,000 barrels in the week ended September 24, when they stood at 150,468,000 barrels, or 29.2 percent higher than the level of 116,472,000 barrels of the corresponding time last year. The stocks are materially out of line with consumption trends, as demand has been running lower this year than last year. But the industry has not displayed any serious concern over the fuel oil supplies, as evidenced by the fact prices of those oils have continued relatively steady. Presumably, it is expected that the large inventories of fuel oil eventually will be fairly well justified by the heating oil requirements of fall and winter and the heralded expansion of industrial production in coming months.

* * *

Oil Company Profits

It is indicated that oil company profits, in the aggregate, will be around 40 percent lower for the first 9 months of 1938 than in the similar period of 1937.

Such a decrease was registered in the first half of the year, and the profits in the third quarter are expected to be from 40 to 50 percent lower than in the comparable period last year.

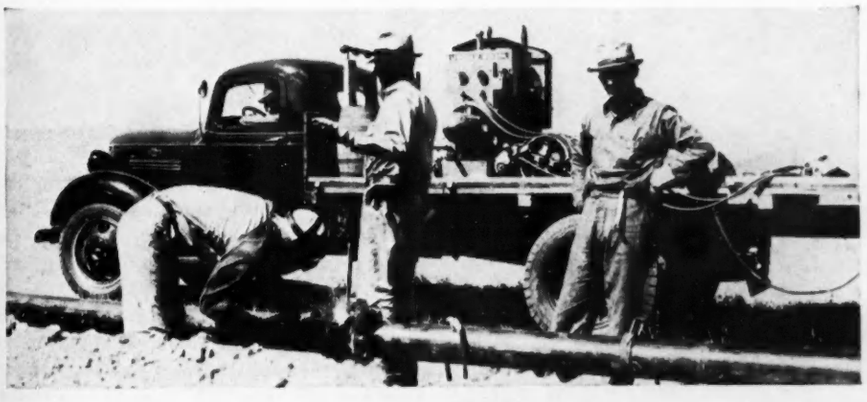
The best records are being made this year by the solely producing companies and integrated companies well fortified with their own production, inasmuch as crude prices have held up well.

Relatively unfavorable showings have been made, on the other hand, by companies more heavily interested in refining and marketing than in producing. For prices of gasoline and some other refined products have been depressed somewhat, in the face of generally unchanged crude prices, with the result that refining and marketing have been largely unprofitable.

Construction of 232-Mile Lance Creek-Denver Line

By JOHN C. ALBRIGHT

1 Tractors are used to pick up the double joints of pipe for stabbing into welding clamps, after which the pipe is lowered onto wooden skids laid across the ditch. With adequate organization, the "cat skinner" can pick up, stab and lower 8000 feet of pipe per day.



2 As soon as the clamps are placed to hold the beveled pipe ends together, tackers secure the joints. Automotive-mounted electric welding machines are used for this purpose. They pass on to the next joint almost as rapidly as it can be told about.

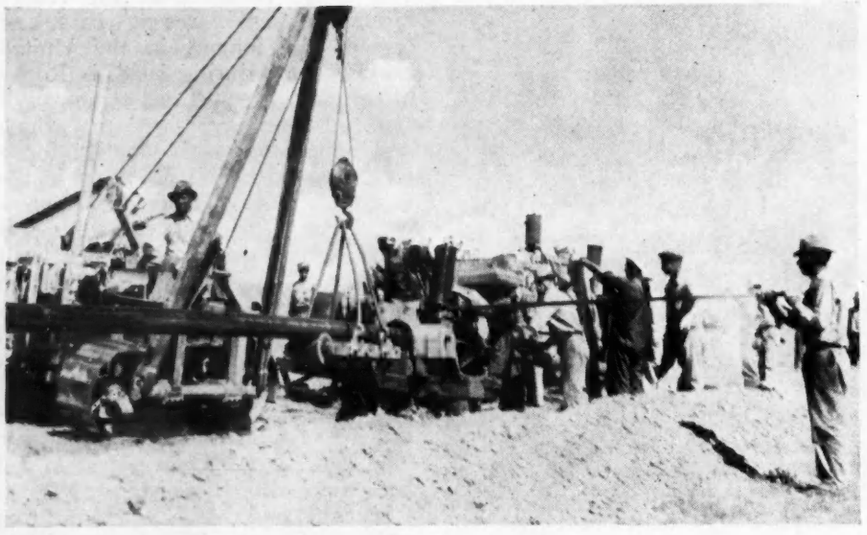
ONE of the largest pipe line projects to be launched in the Rocky Mountain area in recent years, and one of the longest in the United States so far during 1938, is Rocky Mountain Pipe Line Company's crude transmission system, which will supply a positive outlet for a large amount of oil produced in the Lance Creek unitized field of Wyoming. Heretofore, tank car shipments have formed the principal means of moving oil to refining centers from Lance Creek. One line of Rocky Mountain Pipe Line Company's will extend southward 232 miles to refineries in Denver; the other will extend 65 miles to the Glenrock refinery of Continental Oil Company. The Lance Creek-Denver system will be composed of 8-inch pipe as far as Cheyenne, and 6-inch pipe from that point to Denver. The Lance Creek-Glenrock system will be a combination 6-inch and 4-inch pipe line.

Construction of the northern 136 miles of 8-inch pipe is being handled by Bechtel Construction Company of San Francisco, with H. C. Price & Company of Bartlesville, Oklahoma, doing the welding. The southern 96 miles of 8-inch is contracted to Osage Construction Company, which concern also is doing the welding and corrosion protection work.

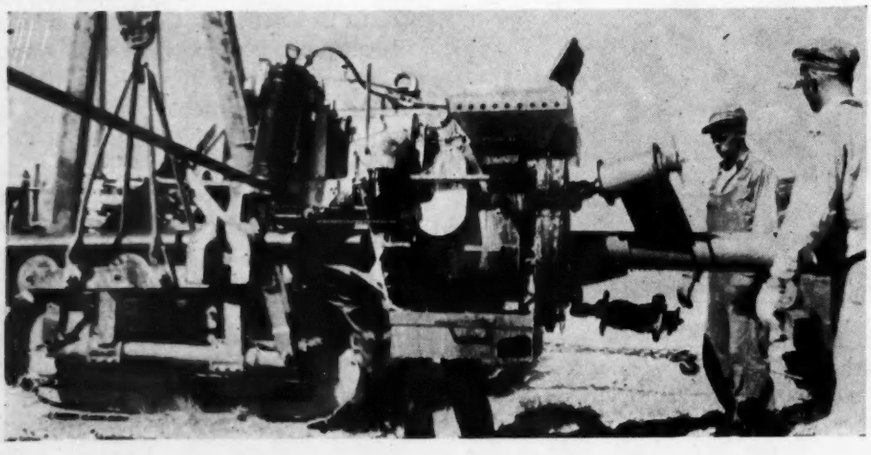
All pipe, whether 6 or 8-inch, is laid in a 30-inch deep ditch. In this region, frost often penetrates as much as 6 feet below the surface, and it would be almost prohibitive to lay the line at this depth. However, no trouble is anticipated in handling the Lance Creek oil during the cold winter months, as it is comparatively light and the pour point is quite low.

The terrain traversed by the sys-

3 After tackers have obtained sufficient bondage between the pipe joints, the welding clamps are removed—then, everything is clear for the finishing welders.



4 Close behind the welding crew, comes the enameling and wrapping machinery, which operates at an average speed of about 80 feet per minute when no obstructions are present. The pipe is lifted from the skids by a tractor boom, to which is attached a roller equipped sling. The tractor also pulls the enamel heating equipment and bolt of kraft paper and other materials.



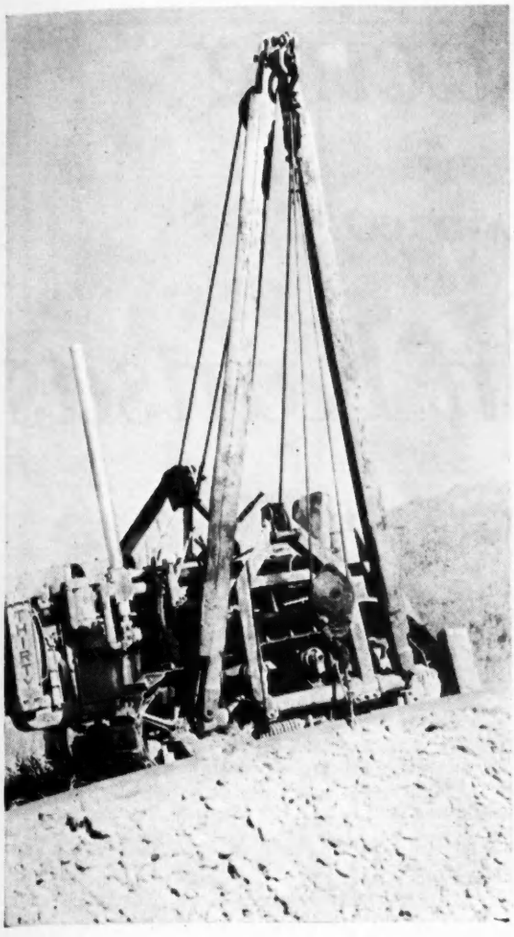
5 The enameling and wrapping machine is self-contained, operated by a small gasoline engine connected to the wrapping mechanism by chains and sprockets. A single coat of enamel to retard oxidation of steel is applied at a temperature of about 180° F. immediately before the paper wrapper. The heated enamel is removed from a vat on a nearby truck and poured into the hopper of the machine, which feeds it automatically in correct proportions to cover the pipe to the desired thickness.

tem offers no unusual difficulties, as the greater part is high rolling prairies, interspersed with breaks and canyons of generally wide beds. South of Lance Creek for 15 or 20 miles, the 8-inch line traverses rough country in the Lightning Creek watershed of the Cheyenne River, which contains many buttes and hills capped with sandstone. The surface of the ground, however, offers no obstacles to machine ditching. Rolling table lands extend southward west of old Fort Laramie, and then dry farming land leads almost to Cheyenne. South of Cheyenne, the 6-inch line runs through ranching country. However, intensive irrigation between Greeley and Fort Collins calls for extreme diligence in breaking ditches so as to prevent water from going wild.

The stove pipe method of laying pipe is being used in constructing the system. Accompanying photographs illustrate the methods being used by Osage Construction Company in laying its portion of the system.

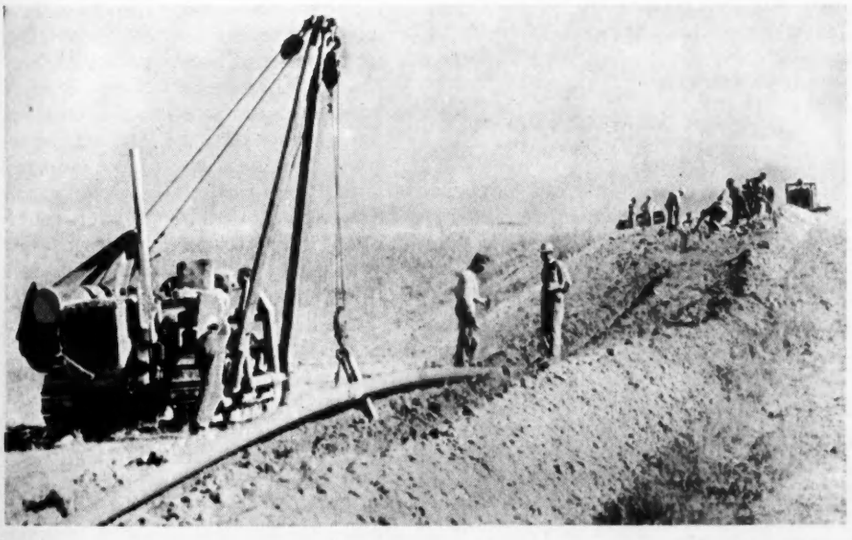
While surveying the right-of-way, engineers determined the corrosivity of the soil. This study showed the northern section (through which the 8-inch pipe was laid) could be expected to cause no appreciable pitting. Therefore, this section of the line is being laid in the ditch with only the mill enamel coating. The territory traversed by the 6-inch line south of Cheyenne, however, is of different type, having numerous "hot spots" at frequent intervals. Long stretches of soil showed minimum tendencies toward corrosive characteristics, but were broken abruptly by extremely corrosive sections that sometimes were only a few feet in length. Consequently, this section of the system is being painted with an oxidation preventative and covered with kraft paper.

Terminals at Glenrock and Denver are being prepared by erecting additional steel tankage, and welding old-



6 A day's run behind the wrapping machine comes the pipe lowering equipment, which takes the pipe off the skids and lowers it to the bottom of the ditch.

8 At some of the numerous sharp breaks from caprock to valley and canyon floors, the line is being padded to prevent scoring of the kraft paper wrapper. Large stones are sifted from the back-fill so that only small pebbles and earth contact the cover. At the same time, bags filled with earth are placed cord-wood fashion over the pipe until a level equal to the depth of the ditch is reached. This procedure is used to prevent erosion of the soft back-fill during occasional torrential rains. It is believed the burlap sacks will withstand the elements until the back-fill has reached sufficient solidity to prevent erosion.



7 Two systems have been followed in laying the line in the ditch, the first of which consisted of leaving the line resting on the skids at rather lengthy intervals, removing those not required to hold the pipe above ground during the hottest part of the days so a maximum amount of slack could be thrown into the line. The remaining skids were removed in early morning hours before the sun began to cause expansion, and the ditch backfilled with a bulldozer. The second method consists of crowding slack into the line immediately behind the wrapping machine, using wooden blocks to force the pipe against alternate side walls of the ditch.

er riveted vessels placed on the ground several years ago. All crude tanks at Glenrock are being renovated, repaired and reconditioned prior to receipt of Lance Creek crude, with a crew of tankies at work with welding torches making vessels oil tight. The terminal at Cheyenne, Wyoming, where Bay Petroleum Corporation will receive oil for running in its skimming plant, is being prepared so that sufficient oil may be taken from the pipe line to accommodate refining requirements.

The refineries of Continental Oil Company and Bay Petroleum Corporation will be the principal consumers of Lance Creek crude when it is delivered in Denver. Both plants are now operating on tank car supplies, shipped in from northern Colorado, and southern Wyoming. Rocky Mountain Pipe Line Company's transmission system will not only furnish a market for Lance Creek crude, but will furnish process material for three refineries, as well as the fourth at Glenrock through the 65-mile line to that point.

Wider Well Spacing

DEVELOPMENT PRACTICE

Spreading in Kansas

By JOS. A. KORNFELD

Kansas Is Proving-Ground for Wider-Spacing

Marked success of 40-acre well-pacing in the development of Arbuckle lime production in the Ellinwood pool of Barton County on the Central Kansas uplift, initiated six years ago, has served as an example of the merit of spacing wells wider than the conventional 10-acre plan. Wider spacing has long been used in Western Kansas oil development, at Shallow Water, since 1935, at South Silica and other areas. Though the most effective plan for obtaining greatest ultimate recoveries is to space the potential discovery well properly to start with; yet, in order to modify its development in the Silica pool, Stanolind applied wider spacing, even though the pool had been the locale of conventional 10-acre spacing for seven years. A new method of applying 40-acre spacing, yet protecting lease boundaries by 330-foot offsets, has proven successful in the development of the new Schroeder (Arbuckle) pool of southwestern Ellsworth County. The article on wider well-spacing carried herewith describes how these plans are put into practice.

THE trend towards application of wider well-spacing in oil field development is clearly evident in new projects in Western Kansas, not only from the advantages of greater ultimate recoveries but from the imminent economic necessity caused by rapidly-falling well allowables resultant from drilling campaigns forced by close-spacing practice.

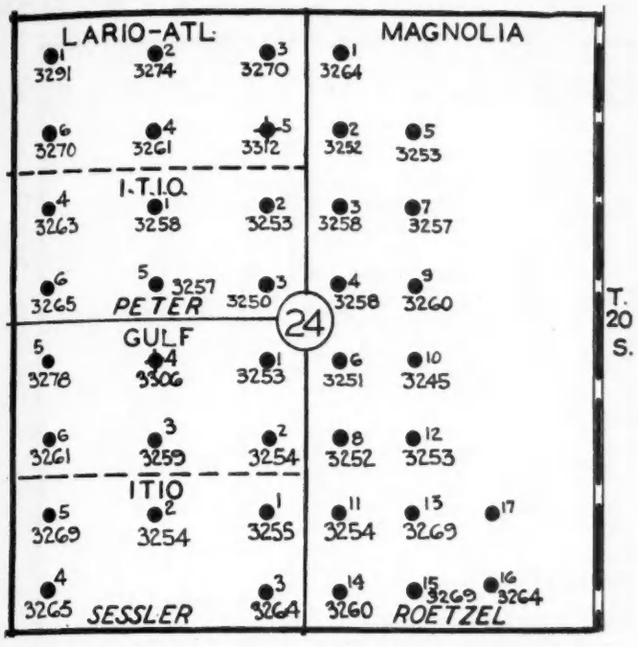
New 13-Acre Spacing

During August, two important producing areas on the Central Kansas uplift were the locale of introduction of modified wider well-spacing. On the west side of the heavily-drilled Silica (Arbuckle) pool of western Rice and southeastern Barton counties, Stanolind Oil & Gas Company increased its spacing pattern from 10-acres to an approximate 13-acre plan in the development of 160-acre tracts, although forced to follow the old 10-acre plan at boundary corners to match competitive locations to prevent drainage by offset operators. The new modification of the old 10-acre spacing followed in the development of most of the Central Kansas uplift fields is an effective approach to the problem of unnecessary drilling. It comprises the staking of locations at the center of north and south lines of each 80-acre and 160-acre tract; a practice that protects boundary lines and reduces the number of wells in the development program by 2 tests for each 80-acre tract and 4 tests for each 160-acre tract.

The Stanolind's practice was introduced late in August with the staking of three tests in the northeast quarter of Section 11-20-11w, and the scoutheast quarter of Section 2-20-11w. It follows similar practice introduced into South Silica during 1937 by Indian Territory Illuminating Oil Company, Gulf Oil Corporation and Lario Oil & Gas Company in Section 24-20-11w, in which boundary corners were protected by the conventional 10-acre locations but "inside" locations developed by locations 1320 feet from corners of 80 and 160-acre leaseholds. Production is found at 3300 feet in the Arbuckle lime.

Shell Petroleum Corporation, Phillips Petroleum Company and Indian Territory Illuminating Oil Company early in August modified their year-old development at South Trapp from 10-acre to 13-acre spacing when faced with such a situation that had confronted operators at South Silica and Silica. This locale is in the west half of Section 7-16-13w, in northern Barton County, productive from an average depth of 3310 feet in the Arbuckle lime. A few months earlier, Sinclair Prairie Oil Company modified its spacing by staking Louis Hoffman 2 in the center east line of the northeast quarter of Section 7-16-13w, being matched at the east offset by Tom C. Johnson on the Hitter 320-acre, comprising the west half of Section 8-16-13w.

Another recent application is that followed on a



Map by Mid-Continent Handy Map Service

Thirteen-acre spacing, a modification of 10-acre development, was introduced successfully by Gulf Oil Corporation, Indian Territory Illuminating Oil Company and Lario Oil & Gas Company in the early development of the South Silica field during 1937 and 1938 in the very midst of previous conventional 10-acre development. This map of Section 24-20-11w, illustrates how lease boundaries were protected by regulation 10-acre spacing, and how 13-acre spacing was applied despite a dense drilling pattern caused by competitive operations. The 13-acre spaced wells, the two left most rows of wells on the map, are located in the center of the north and south lines of each 80-acre and 160-acre tract by being placed 1230 feet from the corners. This reduces 80-acre development by two wells and 160-acre development by four wells.

communitized block in western Rice County operated by Shell Petroleum Corporation at North Cramm, one mile north of the Cramm pool proper. The discovery well was Cramm 1, located at the center of the north line of the northeast quarter of Section 15-19-9w, completed at 3273 feet in the Arbuckle lime. The north offset was completed during August by same operators at approximately the center of the south line of the southeast quarter of Section 10-19-9w.

New Forty-Acre Pattern

A new type of 40-acre spacing has been introduced in Western Kansas by Cities Service Oil Company with marked success to date. It is the practice of staking initial locations 1320 feet from any section corner or quarter-section corner and 330 feet inward to the well-site. Most practical application is in the development of communitized blocks as in the recent-discovered Schroeder pool operated by Cities Service and shared by Skelly Oil Company, Transwestern Oil Company and others. The discovery well was Cities Service Oil Company's Schroeder A-1, located in the center northwest quarter of Section 29-17-9w. Gulf Oil Corporation matched the location at its north offset to the discovery, being outside of the communitized block. With resumption of its development, Cities Service on its 320-acre Schroeder lease in the west half of Section 29 staked its second test on the leasehold one-half mile due south of No. "A" 1 in the center north line southwest of Section 29. Spacing pattern for drilling the Mollhagen "B" and "C" 160-acre tracts in the northeast quarter and southeast quarter of Section 29 is indicated by an accompanying map. If economic conditions, local market demand, and reservoir characteristics justified at any time in the future a denser development, the spacing pattern can be easily icreased to 18-acre spacing by filling in the corner locations; a more flexible plan than was the old plan of 40-acre spacing (in the center of 40-acre tracts) followed.

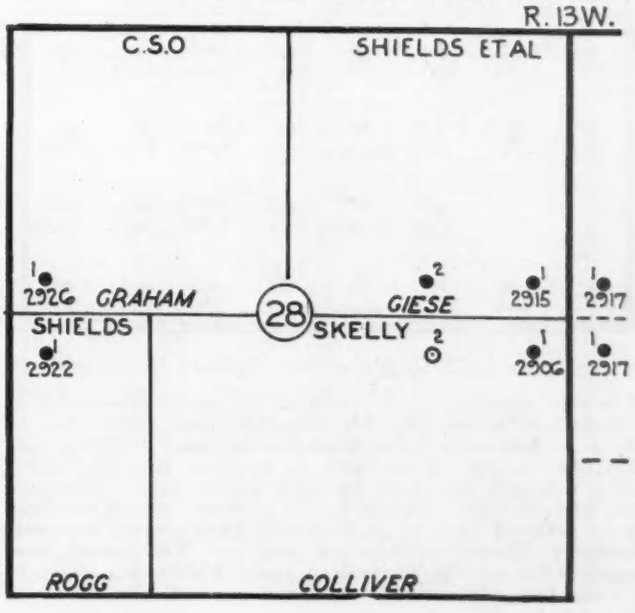
Ellinwood First Wide-Spacing

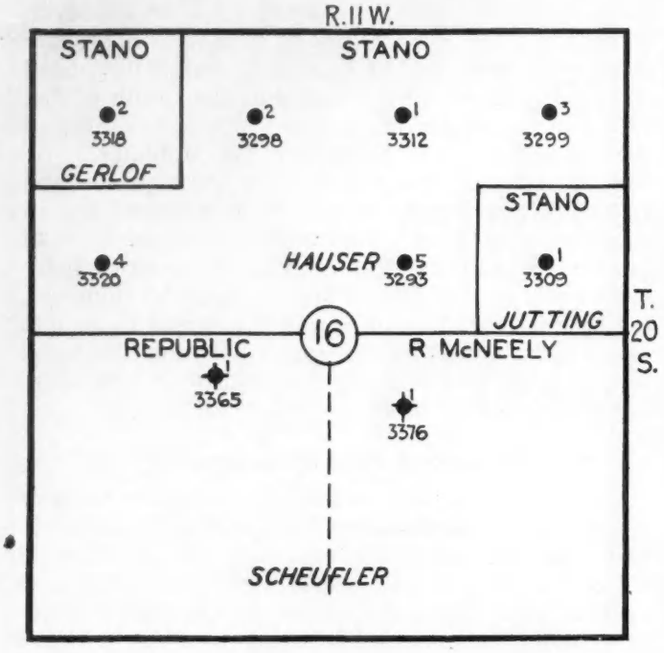
Ellinwood pool, one mile southeast of the town of Ellinwood in southeastern Barton County, is probably the first oil-producing area on the Central Kansas uplift to be developed under the old 40-acre spacing plan. The wells, staked in the center of 40-acre tracts, have yielded a higher recovery per acre than where the conventional 10-acre spacing plan utilized. Proved areas total 920 acres in Sections 4, 8, 9, 10, 15 and 16, in Township 20-11w. At present there are 16 oil wells on production with a combined daily potential of 3750 barrels per day.

This pool would have required the drilling of 92 wells under the 10-acre method of development, which would have resulted in the drilling of 76 additional, unnecessary wells with no increase in ultimate recovery

One of the more recent applications of the new 13-acre spacing plan was introduced early in August by R. H. (Dick) Shields in the Letsch field of Russell County, long the scene of 10-acre spacing. Shields staked his Giese 2 in the center of the south line of the northeast quarter of 28-14-13w, marking the first departure from the 10-acre spacing plan in the field. Early in September, following completion of Giese 2, Skelly Oil Company staked the south offset in the center of the north line of the southeast quarter of section to match the 13-acre spacing of Shields.

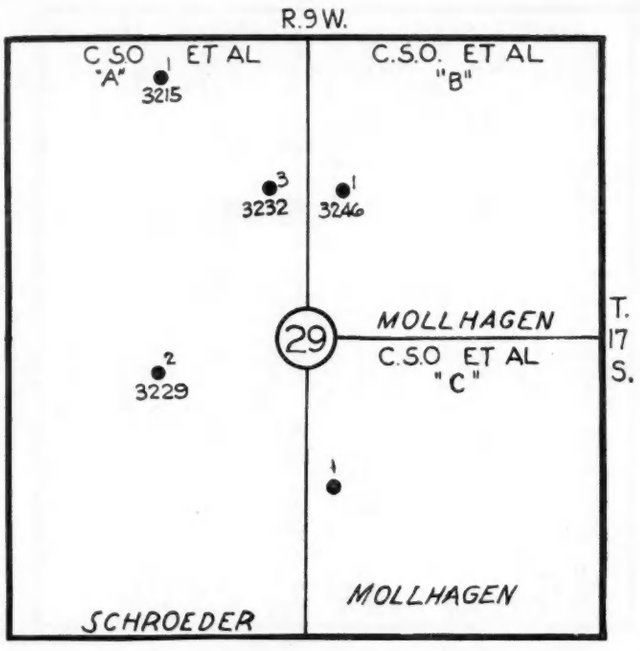
Map by Mid-Continent Handy Map Service.





Map by Mid-Continent Handy Map Service

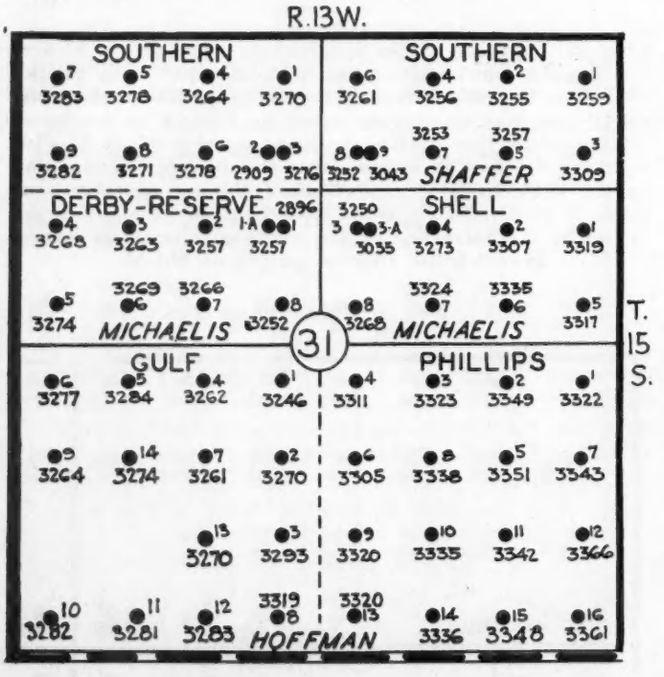
Forty-acre spacing in the Ellinwood field of southeastern Barton County was the first wide spacing effort in western Kansas. The wells, located in the center of 40 acres, have had a high recovery per acre, and, of course, development costs were reduced materially.



Map by Mid-Continent Handy Map Service

Forty-acre spacing, in another variation, is shown in this map of the discovery section of the new Schroeder field of southwestern Ellsworth County. By locating wells in the center of quarter-section boundary lines, direct offset may be matched to protect leases from drainage in competitive development, yet not incur a drilling campaign of unnecessary wells of a density greater than needed to obtain maximum ultimate recovery.

assured. It has been on production since its discovery on July 16, 1932, by Midwest Exploration Company's (now Stanolind Oil & Gas Company) Scheufler 29 in the C SW SE of 9-20-11w, completed from a total depth of 3334 feet in the Arbuckle lime; it was located on the basis of core-drilled structural data, verified by reflection seismograph survey.



Map by Mid-Continent Handy Map Service

Ten-acre spacing, now considered by some economists as unjustified well-density for Arbuckle lime production in Western Kansas is exemplified by this map of Section 31-15s-14w, in the Trapp field of southern Russell County. Sixty-two wells have been drilled within an area of less than one square mile, whereas under modern spacing methods it is believed that 40 wells would have proved adequate under a 13-acre well-spacing program. This would have resulted in savings in drilling costs, highly important in the face of extremely restricted per well allowables.

Wide Spacing at Shallow Water

The second area to receive the application of wider well spacing in Western Kansas was the Shallow Water field of southern Scott County, discovered on March 6, 1935, by Atlantic Refining Company's Mary C. Vaniman 1 in the center of the southeast of the northeast quarter of Section 13-20-33w, originally completed at 4681 feet in the Mississippian lime. Atlantic has not only introduced 40-acre spacing but followed it to date despite offset dry holes. To date 7 producers have been completed with a combined daily potential of 7687 barrels from 240 proved acres. Like Ellinwood, locations were staked in the center of 40-acre tracts, a method apparently justified due to the absence of competitive development.

Space Wildcat Locations

The proper application of wider well-spacing lies in the spacing pattern of the wildcat location itself. If its lineage is staked such that in the event of production, proper well-spacing will inevitably follow, the method will prove the most practical. Otherwise, if the location is made on a 10-acre pattern in a boundary corner with offsets held by competitive ownership, three adjacent tests are immediately forced by completion of a discovery well, since the "die is cast" at the outset of development.

GEOPHYSICAL IMPROVEMENTS OPEN WAY FOR EXPLORING VAST VIRGIN AREA OF

Upper Coastal Trend

By JOHN D. TODD and FRANK C. ROPER, Consulting Geologists

THE Upper or Inland Coastal trend of the Gulf Coast district of Texas and Louisiana offers a large virgin territory that has never been explored thoroughly with present geophysical methods. There is no known geological reason why many structures do not exist in this area. Because of inherent stratigraphic problems, geophysical work in the area will be difficult, but with the improved instruments and techniques now in use many prospects are expected to be found along this trend in coming months.

Most of the 4,500,000,000 barrels of known unproduced oil on the Gulf Coast is of Post Eocene Age, and will come from beneath the flat, black soiled lands adjacent to the Gulf of Mexico. The accidental discovery of oil at Spindle Top led to the early exploration of this coastwise strip of land, which is very flat and easily manifested any intrusion produced by a piercement type salt dome. On the coast too, the high moisture content of the soil, in many cases perennial marshes, made the apprehension of oil and gas seeps much easier and thus led to the discovery of many of the earlier oil fields.

Immediately inland from this Coastal Belt lies another tier of counties. These are called the Upper or Inland Coastal Trend. Geologically this Upper Coastal Belt is related very closely to the Coastal Belt, although from the surface there is no resemblance. This Upper Trend occupies an altitude from 100 to 500 feet above sea level, and the rolling character of the topography masks any uplift produced by a piercement type of dome. The soil is sandy, and as the area is well drained it is much drier than the coast, with the result that gas and oil seeps are rare. This Upper Trend is too far updip for the Post Eocene beds to prove productive, but rather reservoirs would have to be found in the Eocene section itself.

Because of the fruitless results of early wildcats, this trend soon acquired a bad reputation and came to be considered as barren territory. This trend had produced very little oil prior to late 1931, when Conroe came in as a surprise.

Conroe Trend Play

Immediately after the introduction of geophysical methods in the early '20s, geophysical programs were confined largely to the Coastal Belt; this was on the theory that the place to look for oil is where you find it. Prior to Conroe some scattered refraction seismograph work had been done in the Upper Coastal Trend, but such early sorties were halfhearted and without any real expectation of finding anything.

Conroe proved that at least one real oil field did exist in this area of bad repute. Conroe also demonstrated that a good sand body existed in the upper part of the Eocene, that could be expected to produce oil wherever structure was found. The existence of this sand body in the upper Eocene, known as the "Cockfield," made this entire area more attractive for exploration; at the same time it eliminated the condemning effect of most of the dry holes in this trend, for very few of the wells had been carried to the Cockfield.

The result of the finding of a first class oil field with a first class sand reservoir in this then third class area, was to draw attention to this trend. A leasing orgy immediately took place, involving millions of acres, on a basis never before witnessed in this part of the country. Companies bought not at favored spots, but covered entire counties with spreads, on the theory that many other Conroes would be found and that some of the leases would be productive.

At this same time seismology was just graduating from its knee-length *refraction* pants to its long *reflection* breeches. With a new instrument able to determine the dip and direction of buried beds, seismologists thought it would be possible to rapidly locate all the structures in the trend.

But both the geophysicists and the lease buyers were doomed to disappointment. The lessees learned that Nature is stingy in her manufacture of large prizes, and that if other Conroes did exist they were to be most difficult of detection. Lessees also learned that the Cockfield formation was subject to great lateral variation, and that it very rarely carried as much sand as that manifested at Conroe.

The geophysicists had counted on first localizing probable structural areas with torsion balance. They found the effectiveness of the torsion balance decimated by uneven terrain and wooded lands. But even when torsion balance prospects were located, they learned that the new reflection seismograph just did not give effective results in this trend as it had done under more ideal Coastal conditions.

They found that the sandy condition of the soil required much deeper

shot holes, that energy was most difficult to get through, and that a devastating ground roll often persisted through the recording period. Their surface problems were complicated by large heavy gravel deposits which interfered with recording. They learned that for this area their instruments and techniques were inefficient and ill-adapted. The result was that very few reflection seismograph structures were mapped, and that those that were detailed were always weak and of doubtful validity.

The reverses suffered by geophysics in this area, the disappointment of the wildcatters, and the unsatisfactory sand conditions of the Cockfield—all combined to return the area to its former ill-repute. Leases were dropped and exploration programs curtailed, until by 1935 and 1936 development in this trend was approaching the stagnation stage. As the "burnt child fears the fire" those who had spent liberally of their funds in this area in the early '30s were disinclined to venture farther.

Resuscitation

But interest in this trend was not dead, it was only dormant. The area only needed some good news, indicating some real remaining possibilities, to revive interest in it. This news came in May, 1937, when Republic Production Company and Houston Oil Company brought in the discovery well at Joe's Lake in southeastern Tyler County, Texas. While full details are not available, Joe's Lake production is known to be of Upper Wilcox age, and the wells have excellent and extensive sand sections. The limits of the field are largely undefined, but the proven territory appears likely to involve several thousand acres. Joe's Lake seems to be a first class oil field in every respect.

The opening of prolific Wilcox production at Joe's Lake was followed closely in the fall of 1937 by the discovery of Sparta production, also of lower Eocene age, at Ville Platte, Louisiana, by Continental Oil Company. The Ville Platte field rapidly proved itself a first class one, both as to ultimate recovery per acre and as to acres involved. While the limits of the field are only defined on one side, this field is indicating that it is likely to cover several thousand acres; and extensions sufficient to carry production beyond the Continental's lease block are indicated already.

In addition to these two leading fields, the Sparta and Wilcox also have proven productive in recent months at Segno in Polk County, Texas; at Cleveland in Liberty County, Texas; and at Cheneyville in Rapides Parish, Louisiana.

The effect of these discoveries from new producing horizons was to reawaken interest in this trend. At this time it was easier to arouse interest in a new area, for the reason that operators were looking for new territory because the Coastal Belt had been worked to the point of diminishing returns by present geophysical methods.

New Gravimeters

Renewed interest also was aroused more easily in the trend at this time, for the reason that new geophysical instruments and methods gave promise of solving the hitherto baffling problem of finding structures in this area.

No complete gravity survey had ever been made of the trend, as had been so carefully done on the Coast. A complete reconnaissance survey of the entire Coastal Belt with torsion balance had greatly simplified the problem of localizing areas in which structures were to be expected. Such work is always rather slow, tedious, and expensive with torsion balance even under the most favorable conditions; and in the adverse conditions of the trend such torsion balance work had always proved more expensive and less effective than on the Coast.

One very important factor in making the trend more attractive in the last two years was that during that period gravimeters had been improved greatly and were available commercially. Gravimeters are very old, but until recent years had not been adapted successfully to the needs of the petroleum geophysicist. Respect for the gravimeter had begun to rise sharply after Conroe drilled out quite true to a prior gravimeter picture; and the discovery of the prolific Tom O'Connor field, generally attributed to gravimeter, had attracted further attention to it.

Sufficient work had been done by 1935 to overcome the problem of temperature control, which is so vital to the accurate operation of a gravimeter. Other difficulties with the instrument had been curtailed or eliminated to the point where the gravimeter could do work comparable in accuracy with the torsion balance. The commercial recognition of this progress has been acute, as is evidenced by the fact that where there was 1 gravimeter in use in 1935 there are today 75 gravimeters in use.

Chief among the gravimeter's advantages is that it is not influenced by terrain or surrounding objects, thus making it possible to work hilly country and wooded sections such as prevail in this trend. It is a small portable instrument that is kept mounted in a truck; as readings can be taken without taking the instrument out of the truck, this makes it possible to work most areas from the road. It is very fast, in that readings can be taken in as short a period as three minutes.

Since the gravimeter takes a direct measurement of gravity, rather than measuring the rate of change of gravity, fewer stations are required and satisfactory reconnaissance work with one station per mile, in the absence of any observed increase in the change of gravity. Since the instrument is faster and fewer stations are needed, much more ground per day can be covered; and this will result in the entire trend being covered in a fraction of the time torsion balance would require.

The combination of all the above factors results in a very fast, economical and reasonably accurate gravity instrument well adapted for use in this trend. Using such improved gravimeters, reconnaissance surveys of the entire trend are now in progress. The gravity anomolies which are being found will be mapped by the most careful reflection seismograph surveys. This localization of the areas to be shot with reflection seismograph is of tremendous economic significance, in that it is so much cheaper than having to reflect the entire area. It is only because the gravimeter is available that it is possible to use this method in the trend, which proved so successful on the Coast.

As the gravimeter is from three to ten times as fast as the torsion balance, the gravity surveys on the trend will not require as much time as was needed on the Coast. In fact, some of the companies are well along with their gravity surveys, and should complete them within the coming year. Already gravity prospects have been mapped, which will be shot with reflection seismograph, and if the geophysical work looks inviting enough, in due time leased and drilled.

Such data as is available indicates that gravity anomalies in the trend will compare favorably in all respects with those on the Coast. Some of the trend gravity anomalies, that have proven out to be oil fields, would compare favorably with the best gravity anomalies of the Coastal Belt, both as to size and intensity.

The fact that gravity anomalies in the trend are large, and that oil fields

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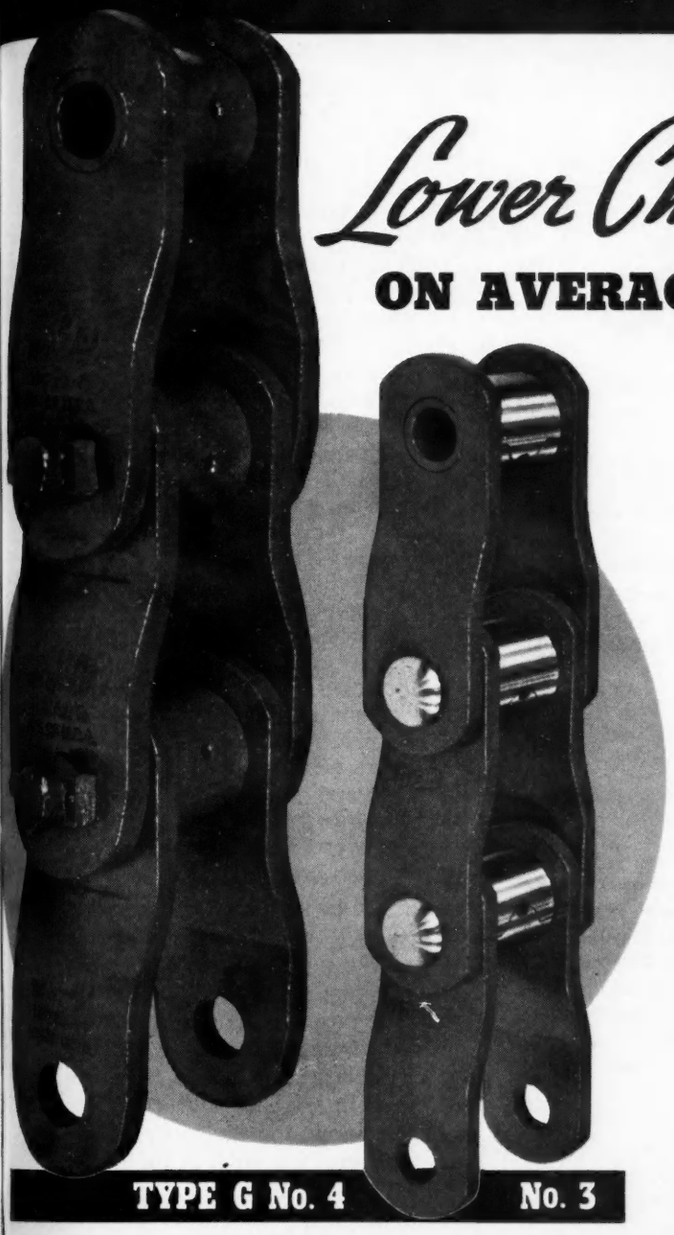

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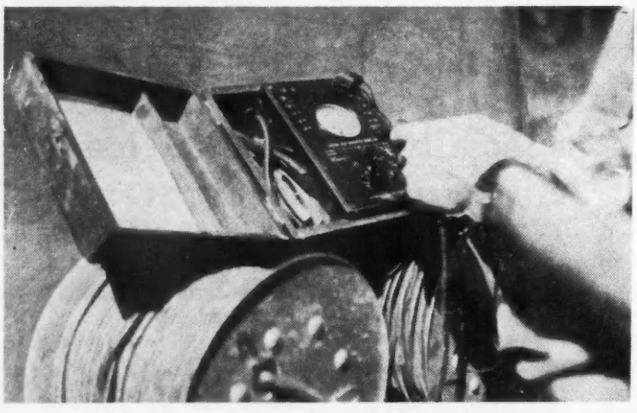

Before any record is made all circuits are carefully tested each time, to be certain that all equipment is operating at peak efficiency.

All records are developed and examined in the field. Imperfect records are eliminated, and new shots taken from the same setups.

Photos courtesy Hoard Exploration Co.

in the trend also are large results in more overlapping between the gravity picture and the production than is expected on the Coast. This increased respect for gravity work leads to more leasing on the gravity work alone in the trend, and in some cases wildcats are being drilled on gravity work unconfirmed by reflection.

Reflection Seismograph

Considerable portions of this trend were worked with reflection seismograph in the post-Conroe days, but many parts of it have never had a single line run across them. Such work as was then done was unsatisfactory, but indicated that this would be a difficult area in which to get good reflection results.

However, the results now being obtained with reflection seismograph should not be confused with those obtained five or six years ago. Much greater advancement has taken place than is usually recognized. The instruments have been improved vastly, so that they are not only more sensitive but better adapted for work in confusing areas. Better techniques are now employed, so that by rearrangement of instruments and shot points much more intelligible results are being obtained. Much more skilled personnel is now in use, both in actual field recording and in office interpretive work; and the increased experience gained in the last six years has thrown much light on results that were then puzzling.

We know now that the *type* of structure to be sought in this trend is not the 600-foot closed dome-like Conroe. We now believe that in the discovery of Conroe the *exceptional* structure, rather than the *expected* type, was found. We are now searching for the large flat-topped structure with very little relief and very low dips. We know, too, that in a region of flat regional dip such as this, even the reversals on the updip side of the structure will not be acute.

We know that to locate such low relief prospects the closest and most careful type of reflection seismograph work will be required. Such expected structures will not necessarily be round or regular in shape. With such structures there will usually be associated some faulting, and such faults will be impossible to locate definitely and will tend to mask the structure itself and make it more difficult to locate. Because of these facts the most accurate form of continuous profile work will be required, and while this is very expensive, the

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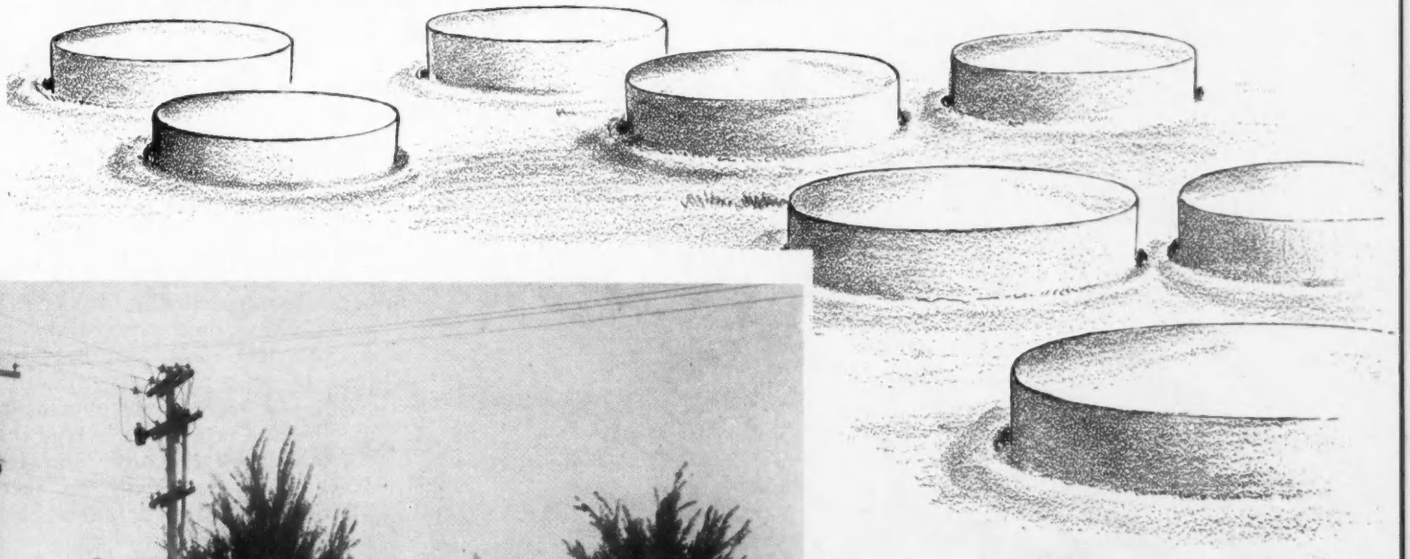

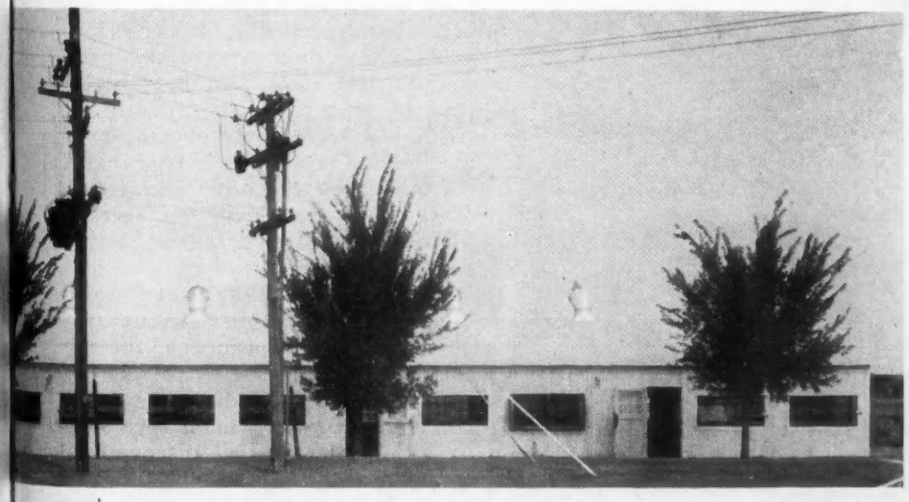

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size of the expected prize will justify the effort.

However, to offset these difficulties we now know that structures of great closure are not required, and often not preferred. We know that relatively flat structures that would command no respect on the Coast will prove to be most satisfactory oil fields in this belt. There is an observed tendency for prospects in the trend to have more *drilled* closure than *reflection* closure, which is just the reverse of the condition found on the Coast. This fact that poor pictures make good oil fields in the trend accounts for the fact that one good field only had *fifty feet of closure* on close reflection seismograph survey.

Not only do the fields seem to prove out with more vertical relief than shown on shooting, but also they tend to cover a larger area. This is borne out by the fact that at Ville Platte the production is already beyond the picture, and bids fair to produce beyond the limits of Continental's lease block. With this tendency for prospects to prove larger and higher than shown by reflection seismograph, no reflection prospect can be overlooked no matter how inferior appearing.

A New Method

In addition to gravity surveys as checked by reflection seismograph, the program that proved so eminently successful on the Coast itself, another method of exploration has been developed in the past two years that will prove of great assistance in this particular trend. This is the electrical logging of bore holes.

By this method holes are drilled to a determined depth, usually 1000 feet, at selected locations over a suspected area. Electrical surveys are then made of these holes to determine the resistivity and porosity of the beds penetrated. By correlation of these electrical logs, it is possible to map whatever structure exists at 1000 feet. This method has the advantage over core drilling, in that it can be used where no key beds are available for coring, as correlations are nearly always possible and over surprisingly large areas.

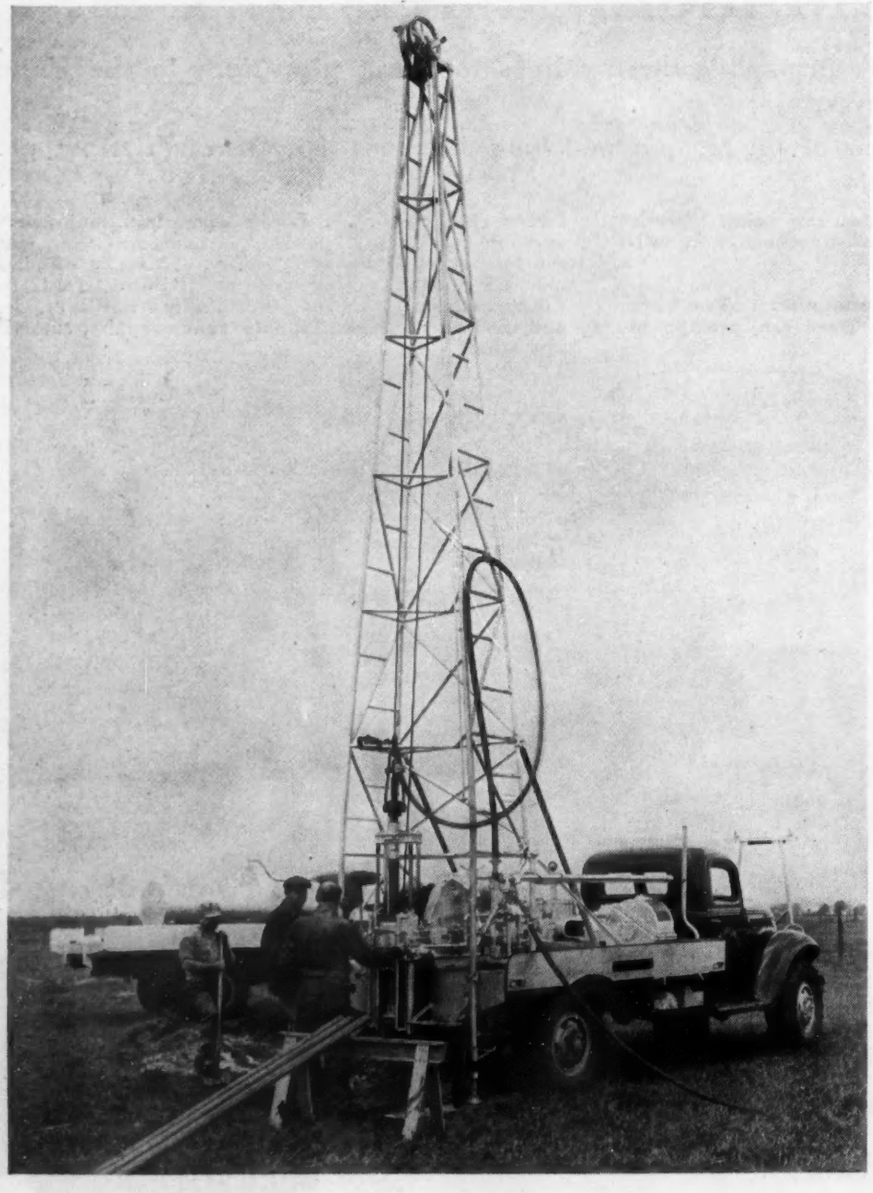
By this method structures with from 10 to 50 feet of closure at 1000-foot levels are being mapped. It seems that the closure at 1000 feet is about 10 percent of the closure to be expected at 7500 to 8000 feet; so that if a 25-foot closure is mapped at 1000 feet, a 250-foot closure would be expected at 8000 feet. By electrical logging of bore holes it is possible to locate faults, and to work out their strike, head and throw. It appears that the same correlation exists in faulting as in structure, and that the throw of a fault at 8000 feet will be about 10 times that indicated at 1000 feet.

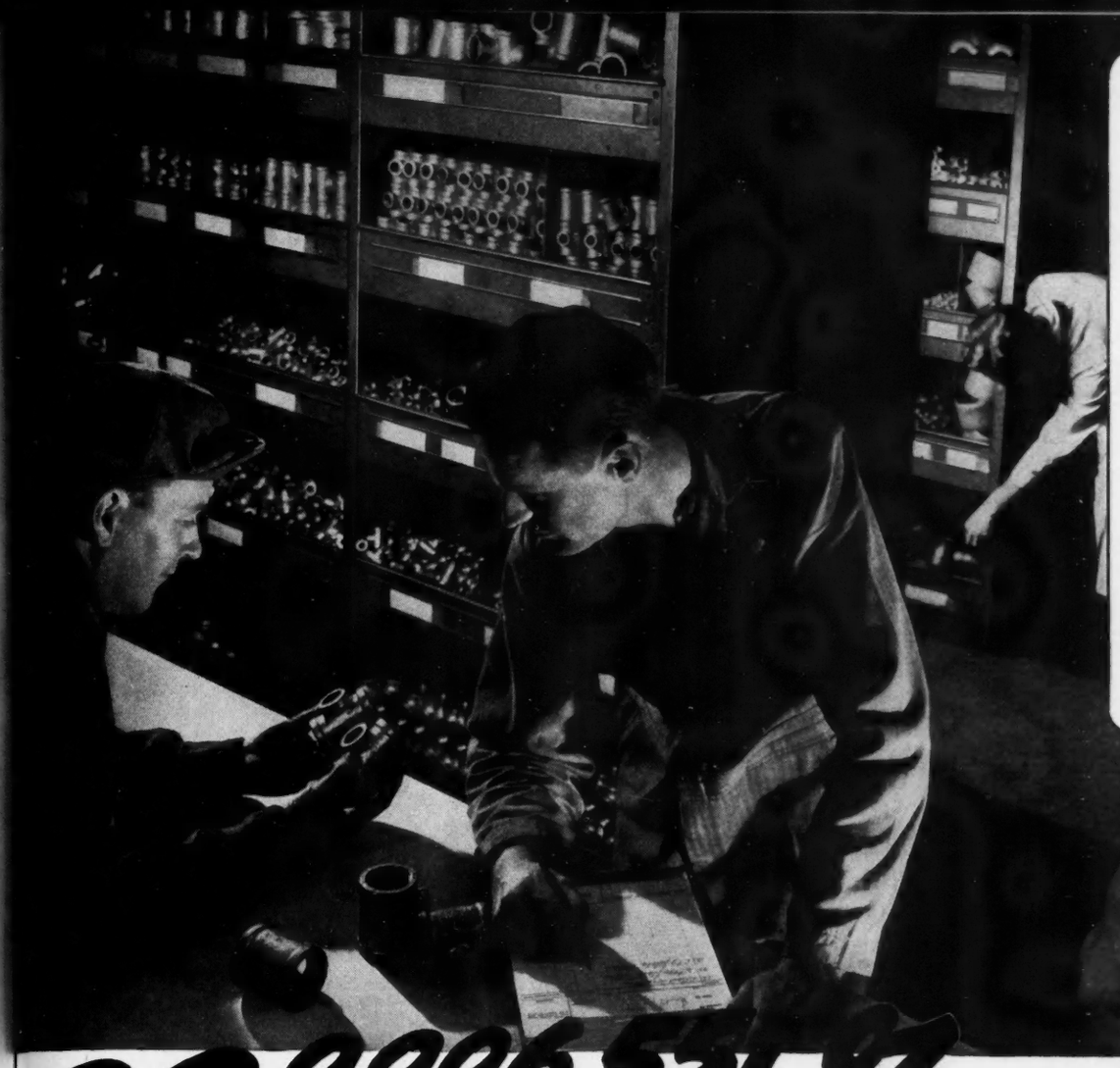
By the use of this method it is possible to work out areas in which the seismograph shows only a part of a structure, and to complete the picture by supplying data where no intelligible reflections are available. While still too expensive for reconnaissance work, the positive results of this method often proves the answer to knotty subsurface problems in problematical areas.

It is interesting to note in passing that 1000-foot electrical logs at Conroe undeniably indicate the size and extent of that structure. While full information is not available, it appears that practically all Coastal oil fields have definite structural expression at 1000 feet, and it is highly probable that most structures in the trend will have some expression at that level. Certainly it is true that if there is any structure indicated at 1000 feet, there will be increasing amounts of structure at greater depths.

It now appears that recent important advancement in various geophysical methods has opened the way for the locating of structures on the upper Coastal trend, despite the difficulties that formerly made such work of little value. Recent discovery of commercial production at several points indicates that new fields may be expected to be found as a result.

With specially designed portable rigs, bore holes now are drilled rapidly to 1000-foot levels for the purpose of electrically logging them. From this work correlation permits the mapping of structures.





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COUPLINGS — Right Hand, Right and Left, Half (Also Wrought Iron), Reducers, Increasers

BUSHINGS — Outside and Inside Hexagon, Face, Eccentric, Double Tapped

PLUGS — Square Head, Solid, Countersunk, Bar, Barrel

NIPPLES — Close, Short, Long, Tank

UNIONS — Ground Joint, Gasket Type, Female, Male and Female, Air-Pump

UNION FITTINGS — Male and Female, 90° and 45° Elbows, Tees with Union on Run or Outlet

A CRANE FITTING FOR EVERY PURPOSE — The screwed fittings shown above are only a few of the scores of different types and modifications. The complete Crane line includes banded and plain patterns, black or galvanized, in a wide range of straight and reducing sizes; in four pressure classes in malleable iron and five in cast iron.

Evaluation of Mid-Continent Properties for Water-Floods

"HOPE FOR THE BEST" POLICY DISCARDED IN FAVOR OF SCIENTIFIC SELECTION

By L. M. ARNOLD
Geologic Standards Company,
Tulsa, Oklahoma

A LOT OF WATER has gone through the filters since the early-day methods of water flooding were employed in the Bradford field in Pennsylvania. It has become increasingly evident that water flooding today is no longer in the wildcat classification, but rather is a well developed systematic process based on sound engineering principles, which may be likened to a manufacturing plant beginning with raw material and ending with a finished product.

The early bustle to acquire flood acreage with projects based on a fervent "hope for the best" has been discarded in favor of scientific selection. The basis of this is the evaluation of a prospect.

Preliminary Evaluation Factors

In order to carry a flood to a successful conclusion there are many pertinent factors that must be considered. All these are based upon preliminary information concerning the prospect. These determinations which are necessarily made prior to the actual application of a flood are detailed in the following paragraphs:

Past Production—Initial production of a property together with total production to date is a useful "yardstick" in preliminary investigation of a property. Experience has shown that in general the areas which were richest during natural production will yield the largest recoveries when water flooded. Any salt water production also is important as it may indicate the action of a natural or accidental flood already in progress in the sand.

Well Logs—Old well logs, while not necessarily accurate, are often helpful in estimating the thickness of sand and also the general uniformity of the sand over acreage under consideration.

Natural Gas—If fuel for the lease operation is to be supplied by gas it is necessary to have a sufficient supply. Therefore the availability of gas from the lease itself is an important factor in computing operating costs.

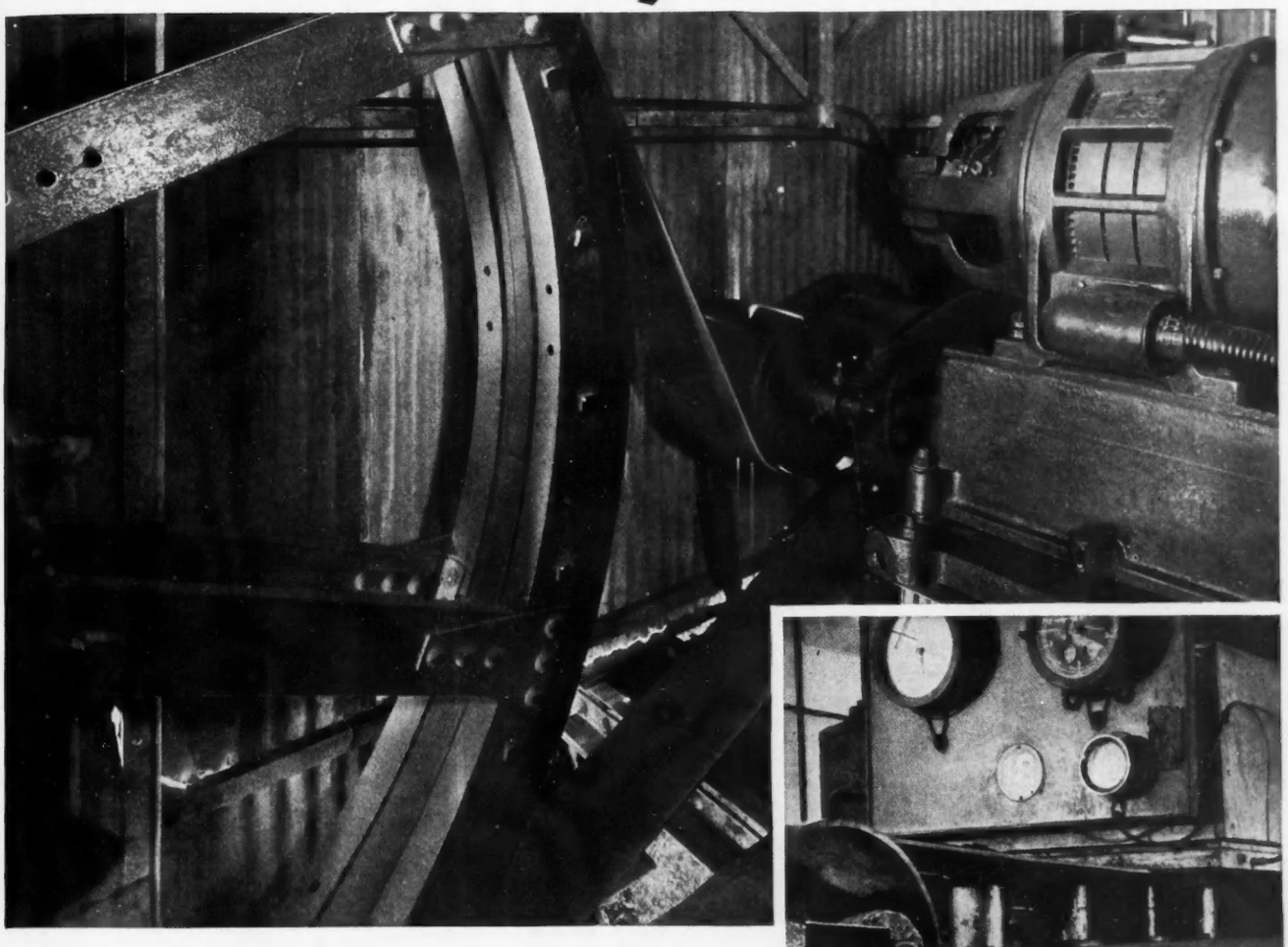
Depth of Sand—The depth of the sand is important for several reasons. The main ones concern drilling and development costs, and floodability of the sand. Drilling and development costs increase with depth, thus favoring shallow depths. In contrast to this some sands are so near the surface that the overburden will not stand the pressure necessary to flood out the sand in a reasonable length of time.

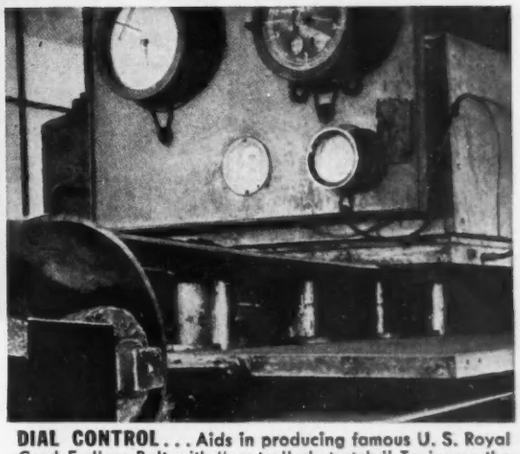
Casing Required—This is another factor affecting development costs. In certain areas wells must be cased to the sand while in others a surface string is all that is required.

Water Supply — An adequate water supply must be available. Its distance from the property and treatment necessary to condition it for use affect both development and operating costs to a large degree.

Grade of Oil Produced—As the gravity of the oil determines its selling price its importance readily

BEAM PUMPING *Goes Modern!*





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Operating methods in the oil industry are on the march! Latest advance in oil field production is beam pumping modernization—with close-coupled motor drives and U. S. Royal Cord Endless Belts! Shown here is a typical *new* installation on a 5000-foot California well: 12-inch x 7-ply U. S. Royal Cord Endless Belt—close-coupled from a 24-inch driving pulley to a 12-foot steel band wheel. Note the perfection of the idler arrangement in this close-coupled drive of only 10-foot centers! Always keeping pace with the oil industry's latest advances are U. S. Rubber Oil Field Transmission Belts—ultra modern belts for ultra modern drives. Another example of what we mean when we say U. S. Rubber Products give—

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is seen. It is an interesting phenomenon that after a flood begins to take effect the gravity often increases two or three degrees A.P. I. Viscosity, too, is usually affected by the pressure established by water drive and in some cases has been known to decrease as much as 50 percent, which materially decreases the resistance offered the flow of flooded production through the sand.

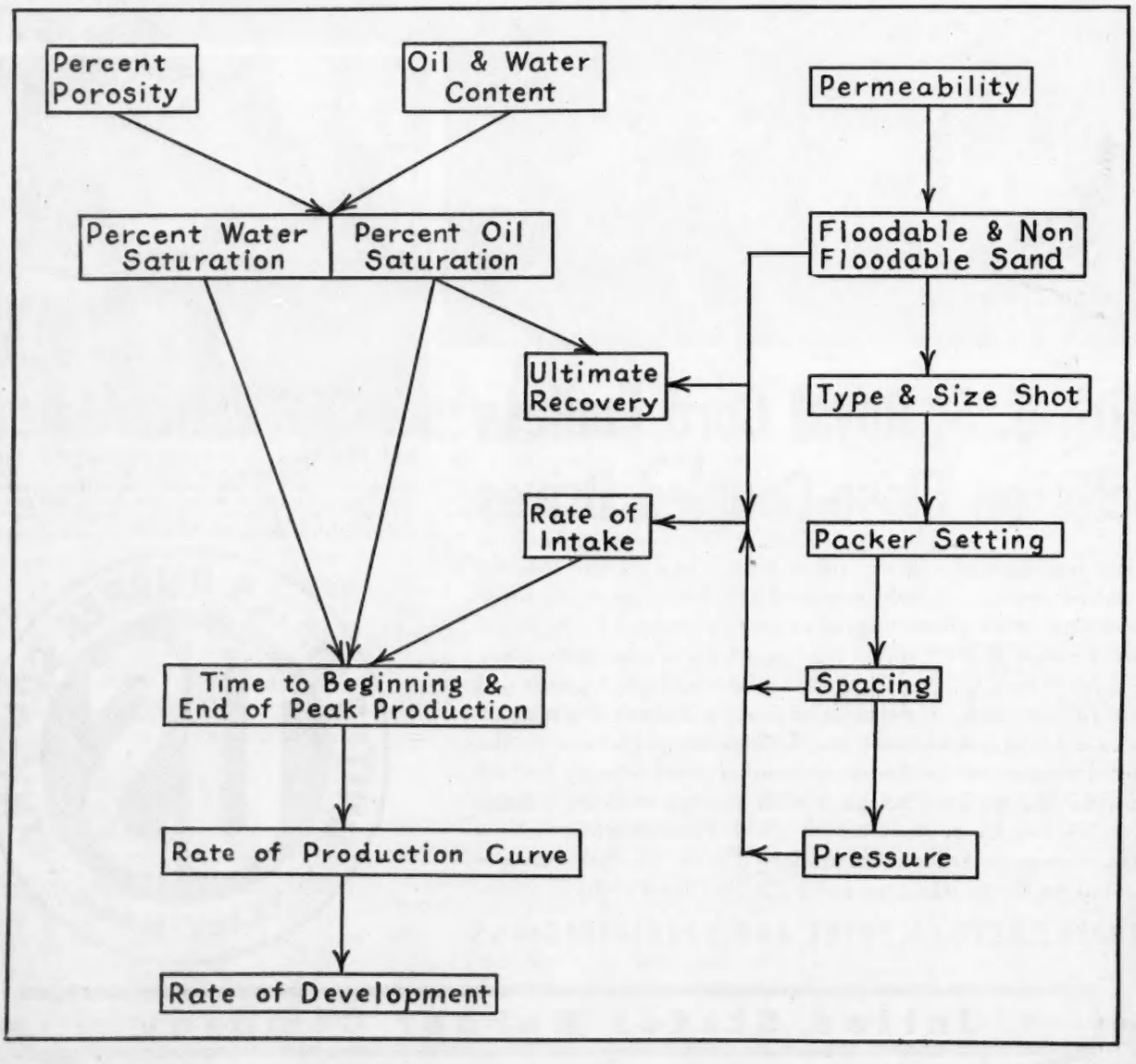
Purchaser of Oil — With some producers without any pipe line connection it has become increasingly important to be assured an outlet for the oil produced before a property is acquired.

Repressuring Operations to Date —It has been found that where excessive pressures are maintained on air repressuring projects there may result a channeling effect when a flood is put on the property which permits water by-passing. This reduces the effectiveness of the water front and necessitates handling large quantities of water. This condition not only decreases recovery but also adds to operating costs.

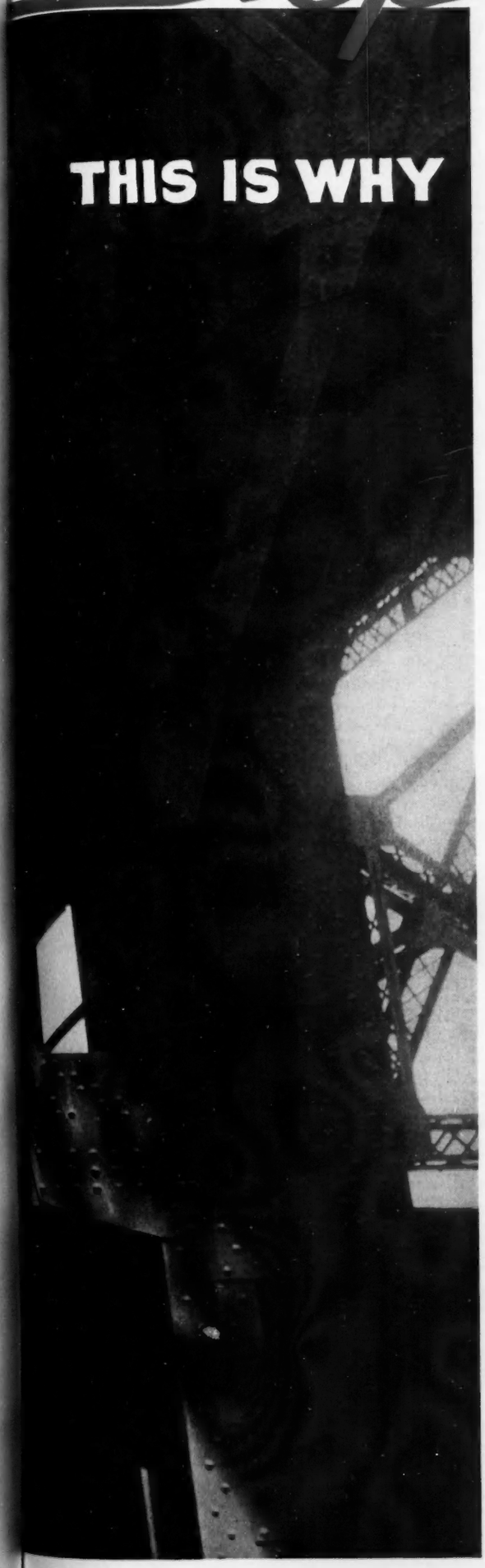
Core Analysis Evaluation

With factors so far considered being satisfactory the next procedure is the procuring and analyzing of cores from the property. A sufficient number of cores should be taken to permit determination of all the good acreage, eliminating thin sand sections and areas poorly saturated. Figure 1 indicates the information and the resultant use of this information, obtained by core analysis. It should be borne in mind that the taking of cores and subsequent analysis of them is the most important step in evaluating an oil property for water flooding as this is the only way possible to get a first-hand picture of the physical characteristics of the sand itself as well as the sand body as a whole. Coring and core analysis are just as important in the evaluation of an oil property under consideration for water flooding as

FIGURE 1
Relationship and function of information obtained from core analysis tests.



Dependable



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sampling and assaying are to mining.

After it has been decided that the property under consideration is adaptable to water flooding so far as physical characteristics are concerned, it is next necessary to take the data and calculations obtained, together with cost figures, and from this to determine the value of the property so far as dollars and cents go. A breakdown of all equipment and supplies needed should be made so that actual development costs may be worked out. When these have been obtained a development budget may be made up from which the present worth of the property is calculated.

Final Evaluation

Figure 2 shows a development budget for a typical Mid-Continent property consisting of 160 productive acres with wells at a depth of 500 feet. The widely applied five-spot pattern has been assumed with a spacing of 330 feet between like wells. A price of $1.00 per barrel is used as an average price for the period to depletion. The core analysis indicated an expected recovery of 4500 barrels per acre. Average costs for operating, overhead and taxes have been used. It will be noted that all development after the first year is carried by production. The budget shows a net return from the 160 acres over the 12-year period to depletion of $141,350.40. Using a compound discount factor of 10%, a present worth of $66,736.12 is indicated. So with an average price of oil of $1.00 per barrel, this property would just break even if purchased for about $400 per acre, and 10% charged as interest rate, which is arrived at by dividing the total present worth figure by the number of acres. At first 10% may seem like a rather high interest rate but a portion of it covers risk, the division being considered 6% interest and 4% risk.

While a detailed budget such as the one illustrated above is necessary for a thorough consideration of a property, it is possible to obtain an approximate idea of the net return a property might yield by a shorter method. And if the net return figure is large enough to indicate profitable development a detailed budget is worked out to determine the present worth of the acreage from this shorter method. Knowing the total number of productive acres, estimated recovery in barrels per acre, average operating and overhead costs, taxes and interest, plus cost of development, the following method may be used:

160 Acres
4500 barrels per acre estimated recovery.
Average price of oil $1 per barrel.

	Barrels
Total production	720,000
Net production (7/8ths)	630,000
Income from sale of oil	$630,000.00
Less Disbursements	
Operating, Overhead, Taxes, Interest } 44c per bbl. (net)	277,200.00
Development	212,000.00
Net Return	$140,800.00

It should be remembered that in the illustrations used here that a sufficient number of cores had been taken and analyzed to prove all the acreage as "productive" and adaptable to water flooding. Also, that it was possible by the core analyses to set up an estimated recovery figure of 4500 barrels per acre for the entire 160 acres and also determine the other factors shown in Figure 1. In cases involving other prospective acreage the sand might be less suited for water flooding, might return a lower ultimate recovery and would of course be of lesser value than the examples cited. Conversely, a greater value would have been indicated had the estimated recovery been larger.

FIGURE 2

Development Budget — 160 Acres

⅛ Royalty—Depth 500 feet—Estimated Recovery 4500 bbls. per acre—Budget price of crude $1.00

	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	11th Year	12th Year	Totals
Acres to develop	40	20	20	20	20	20	20						160
Gross Production—Barrels		72,000	90,000	90,000	94,500	94,500	90,000	90,000	54,000	27,000	13,500	4,500	720,000
Net Production—Barrels		63,000	78,750	78,750	82,687	82,687	78,750	78,750	47,250	23,625	11,813	3,938	630,000
Income—													
Capital	$90,000.00												
Sale of Oil		$63,000.00	$78,750.00	$78,750.00	$82,687.00	$82,687.00	$78,750.00	$78,750.00	47,250.00	$23,625.00	$11,813.00	$3,938.00	$720,000.00
Disbursements—													
Development	$80,000.00	$22,000.00	$22,000.00	$22,000.00	$22,000.00	$22,000.00	$22,000.00						$212,000.00
Operating, Overhead (40 cents per Net)	*1,000.00	25,200.00	31,500.00	31,500.00	33,074.80	33,074.80	31,500.00	31,500.00	18,900.00	9,450.00	4,725.20	1,574.80	253,099.60
Taxes (Barrel)	†100.00												
Interest at 6 percent	5,400.00	5,400.00	4,800.00	3,900.00	2,700.00	1,350.00							23,550.00
Return of Capital		10,000.00	15,000.00	20,000.00	22,500.00	22,500.00							90,000.00
Total	$86,500.00	$62,600.00	$73,300.00	$77,400.00	$80,274.80	$78,924.80	$53,500.00	$31,500.00	$18,900.00	$ 9,450.00	$4,725.00	$1,574.80	$578,649.60
Net Cash Receipts	3,500.00	400.00	5,450.00	1,350.00	2,412.20	3,762.20	25,250.00	47,250.00	28,350.00	14,175.00	7,087.80	2,363.20	♄141,350.40
Cum. Net Cash Receipts	3,500.00	3,900.00	9,350.00	10,700.00	13,112.20	16,874.40	42,124.40	89,374.40	117,724.40	131,899.40	138,987.20	141,350.40	
Present Worth 10 percent C. D. F	3,174.50	329.08	4,066.79	913.68	1,480.85	2,094.79	12,753.78	21,645.23	11,779.42	5,342.56	2,422.61	732.83	‡66,736.12

PRODUCTION SCHEDULE—BARRELS

		1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10th Year	11th Year	12th Year
1st Year Development	40 acres		72,000	54,000	27,000	18,000	9,000						
2nd Year Development	20 acres			36,000	27,000	13,500	9,000	4,500					
3rd Year Development	20 acres				36,000	27,000	13,500	9,000	4,500				
4th Year Development	20 acres					36,000	27,000	13,500	9,000	4,500			
5th Year Development	20 acres						36,000	27,000	13,500	9,000	4,500		
6th Year Development	20 acres							36,000	27,000	13,500	9,000	4,500	
7th Year Development	20 acres								36,000	27,000	13,500	9,000	4,500
Total			72,000	90,000	90,000	94,500	94,500	90,000	90,000	54,000	27,000	13,500	4,500

* First year overhead. † First year taxes. ♄ Net return from 160 acres over 12 years. ‡ Present worth of 160 acres.
Note—Estimated percentage of recovery by years: 1st Year, none; 2nd Year, 40 percent; 3rd Year, 30 percent; 4th Year, 15 percent; 5th Year, 10 percent; 6th Year, 5 percent.

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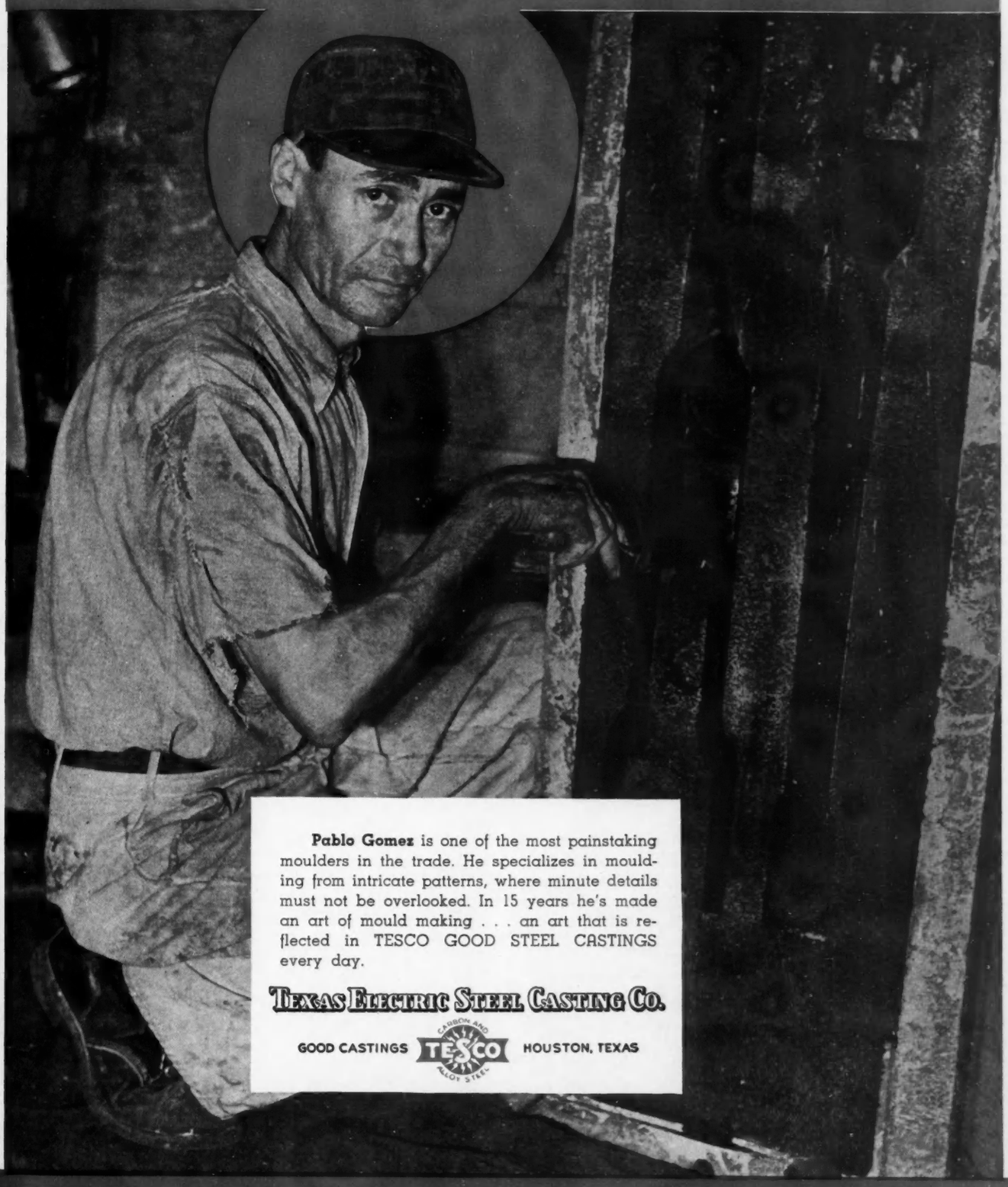
. . . . . with this man



Pablo Gomez is one of the most painstaking moulders in the trade. He specializes in moulding from intricate patterns, where minute details must not be overlooked. In 15 years he's made an art of mould making . . . an art that is reflected in TESCO GOOD STEEL CASTINGS every day.

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GOOD CASTINGS TESCO HOUSTON, TEXAS

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Warehouse Records

California producing companies each have an individual system of keeping permanent stock records of materials, all of which are physically checked by periodical count.

By BRAD MILLS, Associate Editor

THE inventory of warehouse, drilling and production equipment has led to the developments of various accounting methods among California producing companies. All of the larger operators attempt to keep a "perpetual" or running inventory, but physical inventories are necessary as a positive check against accounting errors. Physical inventories are taken from one to 2½ times yearly by the various companies. An actual count at frequent intervals obviously is required to check the accuracy of cards and ledgers.

Taking and maintaining inventories has been a source of worry to all oil companies. Theoretically the perpetual or constant inventory is the perfect accounting medium, but the system has its limitations. The rapid transfer of material and equipment, numerous accounting entries, and the time factor combine to throw the cards or ledger out of balance with the count shown by the physical inventory. Inventory adjustments, however, are much more common among the smaller items and with equipment that is moved several times each year.

The physical inventory serves a dual purpose, by showing the quantity on hand and the location of equipment. The quantity shown on the cards frequently is correct, but the location of heavy equipment sometimes is in error. Where tubular goods or heavy drilling and production equipment is involved, fre-

Inventory card showing full description, catalog number and quantity of material on hand. The plates are arranged in stock card and in inventory card order.

FORM 768 9-37 20M

DATE CAT. NO.

INVENTORY WAREHOUSE

NEW

ARTICLE, FULL DESCRIPTION:

SIZE UNIT

ON HAND	IN Show Form 11 & 959#	OUT Show Form 12#	BALANCE	PRICE	UNIT	AMOUNT

No 38702

FORM 768-A 12-37 5M

DATE INVENTORY

WAREHOUSE

PERCENTAGE OR FLAT PRICE MATL.	CATALOG NO.

ARTICLE, FULL DESCRIPTION:

SIZE UNIT

ON HAND	IN	OUT	BALANCE	PRICE	UNIT	AMOUNT

No 1047

Card for depreciated material. The amount of depreciation taken is shown on each card.

CONTROL

EXPERIENCE WITH

and

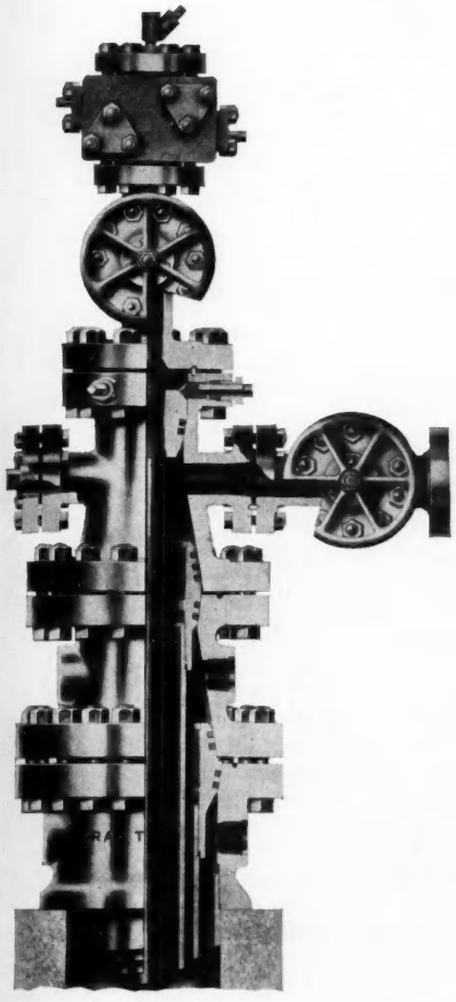
STUDY OF

WELL CONTROL PROBLEMS

accounts for the success of

GRAY

SYSTEMS OF WELL CONTROL



3-String Gray Well Head with Composite Manifold—the result of Building Under Control.

OVER 7000 SUCCESSFUL COMPLETIONS
ON LAND AND WATER

GRAY
TOOL COMPANY
HOUSTON – TEXAS

FORM 11 9-37 30M
PRINTED IN U. S. A.

UNION OIL COMPANY OF CALIFORNIA

MATERIAL RETURNED TO WAREHOUSE

No. _____

WHSE. _____ DATE _____ 19____

CREDIT _____

QUANTITY	CATALOGUE NUMBER	DESCRIPTION	% VALUE	PRICE	UNIT	AMOUNT		ACCOUNT

APPROVED BY
940

RECEIVED BY

FILLED BY

Transfer of material returned to the warehouse.

quent physical inventory is used by several companies. With this type of equipment, the regular warehouse cards are often supplemented with a "running" sheet or list that shows the location and quantity on hand. This sheet serves as a quick reference when drill pipe, casing or drilling equipment is needed for new projects. One major company inventories its tubular goods and drilling equipment monthly, as against a yearly inventory of smaller equipment and supplies. The annual inventory failed to meet requirements.

Union Oil Company's System

Union Oil Company of California has developed its own inventory and accounting system for warehouse and heavy yard equipment. This company carries about 3100 items in stock, and a feature of the inventory and accounting system is the use of catalog or serial numbers, in addition to a description of the item. The use of numbers serves as a good check against errors.

The origin of additions to warehouse stock is through a purchase order from an authorized person. Copies of the purchase order go to the receiving clerk, who holds the orders and signs for material upon receipt. Both copies come to the posting room for entering the material on the stock cards. Invoices are matched with the duplicate copy of the purchase order, and prices of material determined and entered on the stock cards.

Authorized persons issue requisitions on the warehouse for material in stock. The order is filled by the warehouse clerk from the small requisition form, and at the same time a transfer or withdrawal slip is made. The transfer is immediately posted to the stock cards as a withdrawal, at which time it is also priced. The transfer then passes to the accounting department.

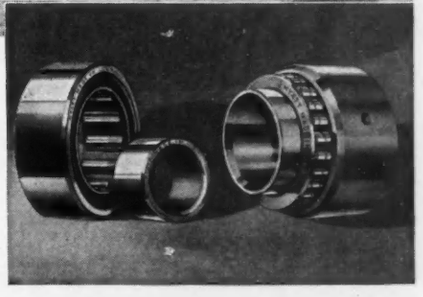
Each warehouse item carries a catalog or serial number. Addressing machine plates are used as a convenient means of making up inventory cards with the description and number of articles. The plates are arranged in stock card order, and also in inventory card order. The use of plates assures a full and uniform description of the warehouse items, and all transfers and transactions are based on the original or master description.

Immediately before a physical inventory is taken, the inventory cards are placed on the bins. The count is shown on the card, and later examination of the card shows either a correct balance or a discrepancy. A physical inventory of all warehouse equipment is taken yearly. The warehouse force is notified a short time before the beginning of inventory, and cards are placed in order.

Used or depreciated items are received into the warehouse at prices they should bring on the open market. Such used items as electric motors are often traded in for new motors, and approximate prices are not difficult to determine from observation of these transactions. The inventory cards for new equipment are pink and the cards for used equipment are blue. The blue card shows the percentage of depreciation taken.

Both the books and stocks are watched for items that need replenishing. When the items are or-

HUMPHREY JOINS THE LONG AND SUCCESSFUL LIST OF HYATT-EQUIPPED PUMPING UNITS



IN the oil field Hyatt Roller Bearings are everywhere. For each operation there is a long list enabling you to choose the make and kind of equipment desired, with Hyatt Roller Bearings carrying the load: rotaries, pumps, engines, blocks, drawworks, etc.

Especially in pumping units where service is severe, and long life so essential, are Hyatt Bearings with herringbone gears predominant. Among the builders of Hyatt-equipped pumping units are American, Emsco, Humphrey, Ideco, Lacy, Lufkin, Muskogee, National, Reed and Western Pacific.

Look for Hyatts in the equipment you purchase and be sure of freedom from bearing wear and care.

Hyatt Bearings Division, General Motors Corporation, Harrison, N. J., and San Francisco. Hyatt Roller Bearing Sales Company, Chicago and Pittsburgh.

HYATT
ROLLER BEARINGS

dered, pencil slips are placed on the bins. These slips show when the order was placed, the quantity ordered, and any unusual data. The slips are removed upon full receipt of the order. Color of the slips is changed monthly to avoid confusion.

The stock balance is shown in the extreme right hand column of each transfer slip. This serves as a quick check on stocks on hand and enables the clerk to maintain stocks. The heavy turnover of the most staple items requires an accounting method that anticipates needs ahead of final stock withdrawals.

A master file is carried on catalog numbers. Once an item is assigned a number that number follows the item as its permanent identification. The numbers do not necessarily run in order, and when a new item is added to stock the next number in that series is used. Discontinued or obsolete numbers are never picked up or revived, as the old item may return to stock at some time.

The warehouse stock record is kept on long ledger sheets, each side of the sheet being divided into five identical columns. Each column carries 24 lines, giving each side of the sheet space for 120 entries into and out of the warehouse. Incoming orders or additions to stock are posted in red, and outgoing orders in black. Balances are shown in black.

The company has attempted to simplify its accounting procedure. The manufacturer's invoice plays an important part in the initial entry on the warehouse stock cards. The company has gradually familiarized the manufacturers and supply houses with its invoice requirements and invoices ordinarily come through immediately. The invoices are matched with a duplicate copy of the purchase order. Transfers are entered immediately and the warehouse stock record constantly reflects the quantity on hand. The transfer sheets are small, but a "follow sheet" is used where a large number of items are involved. The main warehouse is located at Santa Fe Springs.

Texas Company Has Efficient System

The Texas Company of California has developed an efficient warehouse and inventory system. Warehouse cards are kept for each item in stock, and a constant or perpetual inventory is maintained. A physical inventory is taken yearly and the cards corrected to the actual count. Every five years the cards are thrown away and a complete new set installed. Before the five-year inventory is taken, a list of material supposedly on hand is made, but no count is shown. The actual quantity is placed on the new cards and adjustments are made to balance the cards with the ledgers.

Warehouse items are posted to the cards from the purchase orders upon receipt of the material, and not from the invoices. Transfers are made from memorandums signed by authorized persons.

The main warehouse in the Long

FORM 12 3-38 200M
PRINTED IN U. S. A.

UNION OIL COMPANY OF CALIFORNIA No. _____

MATERIAL WITHDRAWN FROM WAREHOUSE

WAREHOUSE _____ DATE _____ 19____

DELIVER TO _____ CHARGE _____

QUANTITY	CATALOGUE NUMBER	DESCRIPTION	PRICE	UNIT	AMOUNT		ACCOUNT	STOCK BALANCE

FORM 772-F NO. | RECEIVED BY | TOTAL | FILLED BY

Transfer of material withdrawn from the warehouse. Long "follow sheets" are used where large numbers of items are transferred at one time.

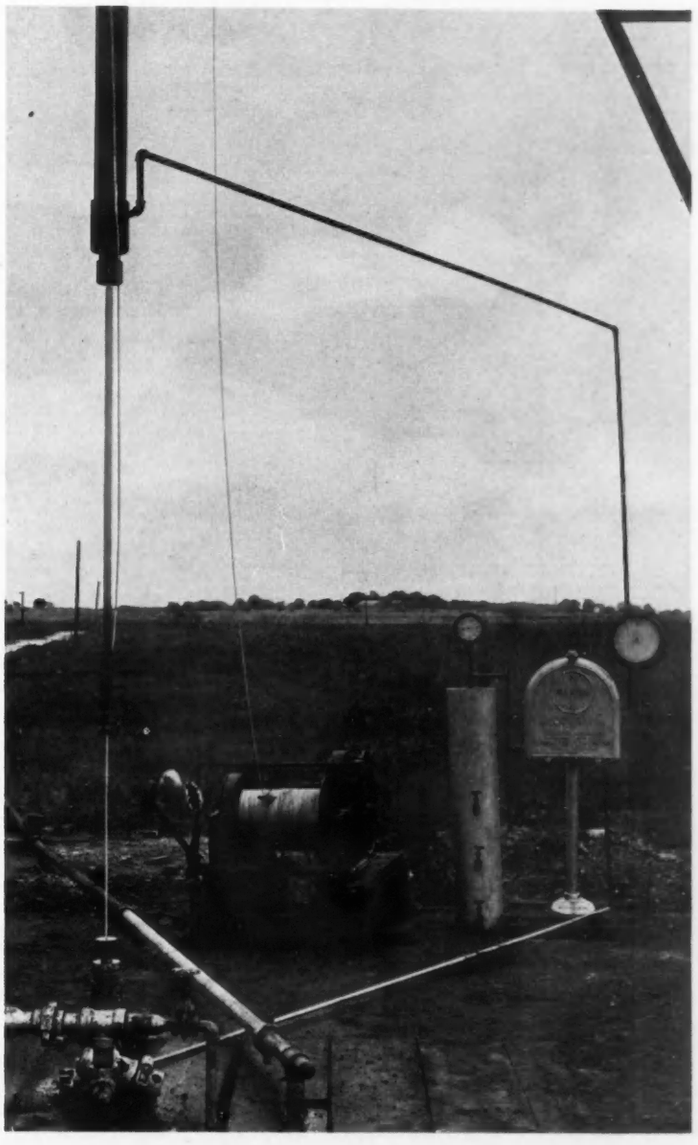
PUT MORE PROFIT

IN YOUR

OIL

When you bring down the cost of lifting your oil you put up your profit in the oil. With the Nixon Surface Control Gas-Lift System, fluid raising costs are far below all generally accepted figures. Not only does it save on fluid raising costs, but the original investment is less, since the Nixon Surface Control Gas-Lift is priced considerably lower than standard pumping rigs.

It will pay you to investigate at once. Write your nearest Wilson Supply Company store or sales office for an interview with one of our 10 gas-lift engineers.



NIXON *Surface Control*
GAS-LIFT SYSTEM

WILSON SUPPLY CO.

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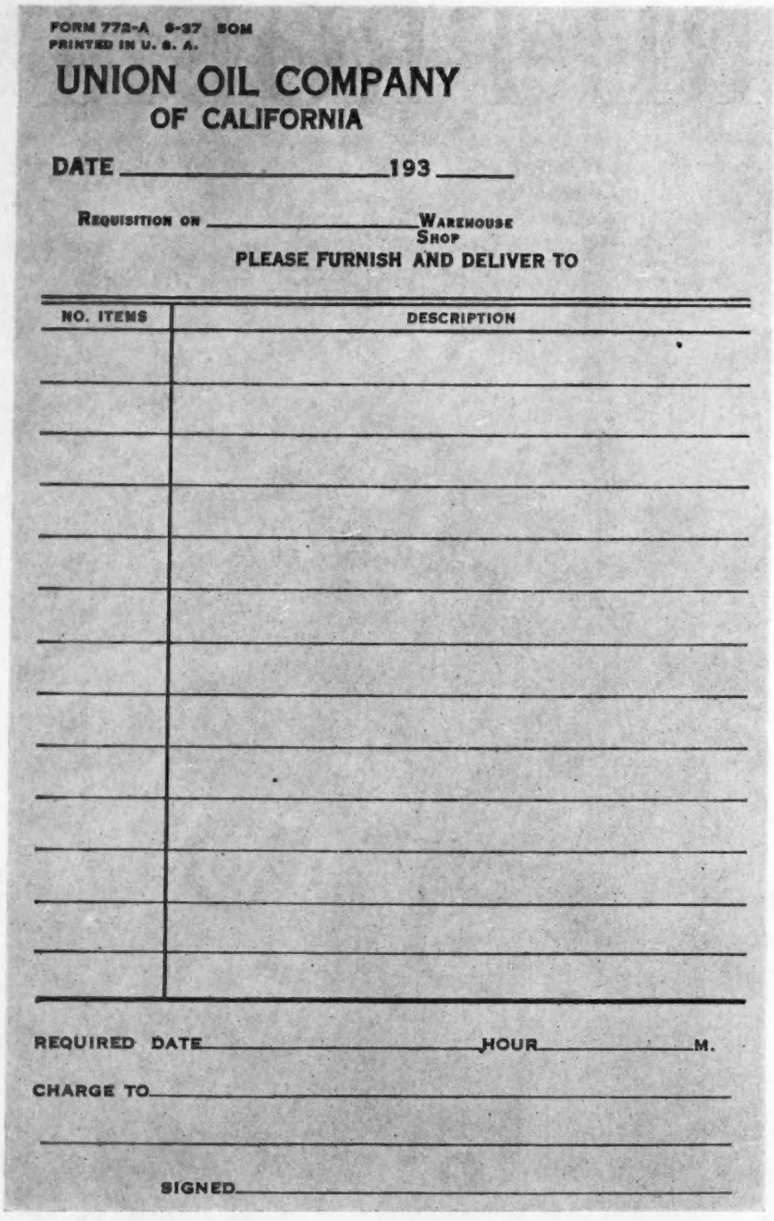
LOUISIANA: Rodessa; Lake Charles; New Iberia; Gretna.
ARKANSAS: Magnolia.
SALES OFFICES — Tulsa, Oklahoma; Dallas, Texas; Shreveport, Louisiana.



FORM 772-A 6-37 50M
PRINTED IN U. S. A.

UNION OIL COMPANY
OF CALIFORNIA

DATE _____ 193 _____

REQUISITION ON _____ WAREHOUSE / SHOP

PLEASE FURNISH AND DELIVER TO

NO. ITEMS	DESCRIPTION

REQUIRED DATE _____ HOUR _____ M.

CHARGE TO _____

SIGNED _____

The movement of equipment from the warehouse originates with this requisition slip, which is signed by an authorized person.

Beach field also handles transportation for the district, and through this connection is able to maintain a more accurate inventory of heavy equipment. Transfers are made from transportations slips, where equipment is moved from one location to another.

An unusual feature of the company's inventory system is the careful check maintained on drilling equipment. Every 30 days a list and location of all drilling equipment and tubular goods is issued. This is corrected monthly by actual inventory. Executives or superintendents can assemble the necessary drilling equipment and casing from the various stocks shown by the latest list. Where equipment is ready for movement to another location, it is earmarked on the list to show that it is not available. The various field men and warehousemen report stocks each month, and from such reports the monthly inventory list is compiled. Each man is held responsible for the accuracy of the stocks of drilling equipment and tubular goods shown.

The adjustment each year between the physical inventory and the count shown by the cards varies from two to four percent of the value involved. Most of the heavy equipment checks closely, and the cards generally reflect a balance close to the actual balance shown by a count at any time. The transfers are posted to the cards immediately, usually at night by the night warehouseman.

Standard Makes Frequent Check

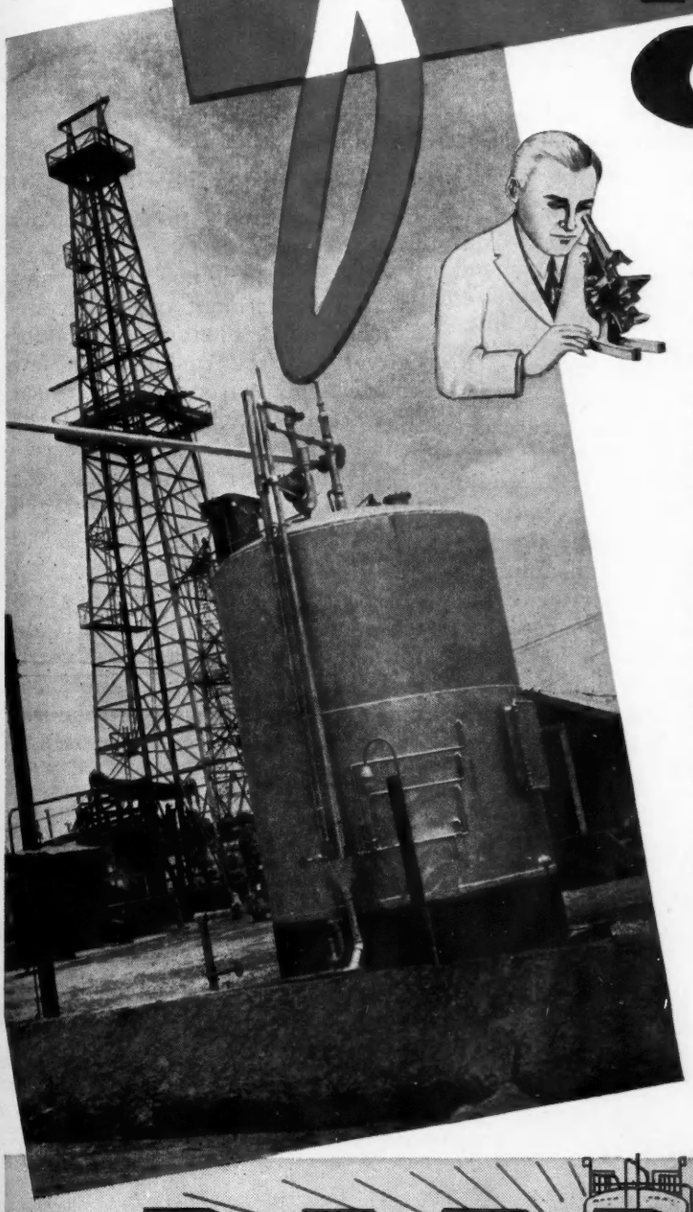
Standard Oil Company of California follows a conservative inventory system, a feature of the accounting method being the frequency of physical inventories. An actual count is made 2½ times yearly, and the correction factor following each inventory is negligible. Warehouse cards are kept on the various items, and a running or perpetual inventory is maintained.

One auditor in this company has made an exhaustive study of warehouse errors and found during a one-year period that it was possible to make 43 types of errors in handling material in the warehouse. In the course of this study, auditors found that much could be done toward locating discrepancies. With a list of 20 or 30 discrepancies, it was possible to correct the errors in most of the accounts. By contacting the men who handled the transactions, the errors were isolated and finally found.

Each branch warehouse carries its own control account, which ties into the main warehouse account in San Francisco. Only authorized men may sign for material. A central or branch warehouse principally serves its own department, but charges are made to any department in case of necessity. Transfers frequently are made from the production and drilling department warehouses to the refinery and marketing branches. Equipment in suspense is charged to the stores account or warehouse and held for transfer. Permanent equipment taken from the warehouse is charged direct to investment when used, and smaller items to expense. When equipment is moved from one location or lease to another, a transfer in the investment accounts is made. This does not affect warehouse stocks, but the location is shown by actual inventory.

Major classifications of accounts are used as an aid to warehouse procedure. The classifications of accounts under which inventories of producing department equipment are classified are: cable-drilling tools; cable-fishing tools; bailers and sand pumps; pipe- and casing-handling tools; rig equip-

A LOW *fixed* TREATING COST



Petreco Electromatic Dehydration offers many exclusive advantages to producers. One of the most important is the fact that the treating cost per barrel of **cleaned** oil usually is lower than for other methods. And of almost equal importance to operators is the fact that this low cost is **fixed,** and is not subject to wide fluctuations.

Petreco engineers can accurately determine the cost of dehydrating any "cut" production before a plant is installed. Producers are thereby provided with definite and dependable cost data for guidance, in advance. This preliminary service is available to all operating oil companies and involves no obligation whatever.

PETROLEUM RECTIFYING COMPANY
OF CALIFORNIA
General Offices: 530 West Sixth Street
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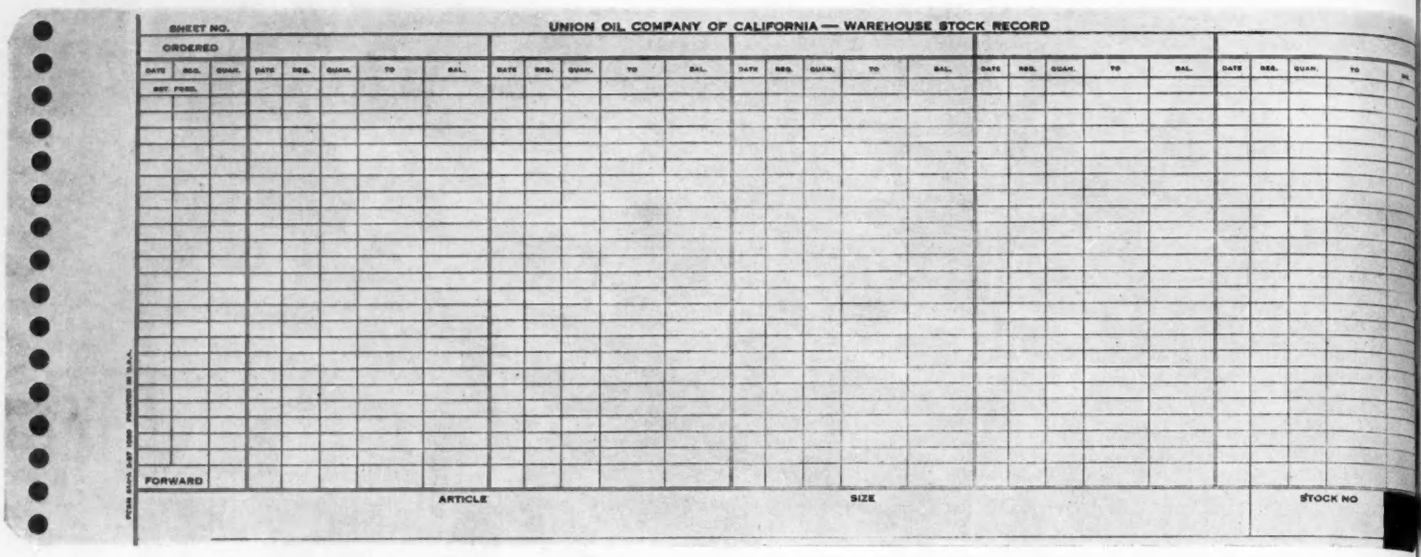
Branches and Service Men in Principal Oil Fields

PETRECO

Electromatic **DEHYDRATION**


SHEET NO.

UNION OIL COMPANY OF CALIFORNIA — WAREHOUSE STOCK RECORD

ORDERED

DATE | REQ. | QUAN. | DATE | REQ. | QUAN. | TO | BAL. | DATE | REQ. | QUAN. | TO | BAL. | DATE | REQ. | QUAN. | TO | BAL. | DATE | REQ. | QUAN. | TO | BAL. | DATE | REQ. | QUAN. | TO

REF. FORM

FORWARD

ARTICLE

SIZE

STOCK NO

Warehouse stock record. Incoming orders are posted in red and outgoing orders in black. (This illustration reduced from form 16-13/16 by 6¼ inches; all other forms shown are actual size.)

ment; flow fittings; rotary-drilling machinery; rotary drilling tools; rotary-fishing tools; rotary-drill pipe; boilers, engines, pumps, etc.; electric-drilling equipment; miscellaneous items not applicable to other classes, rigging-up material units.

General Warehouses Concentrated

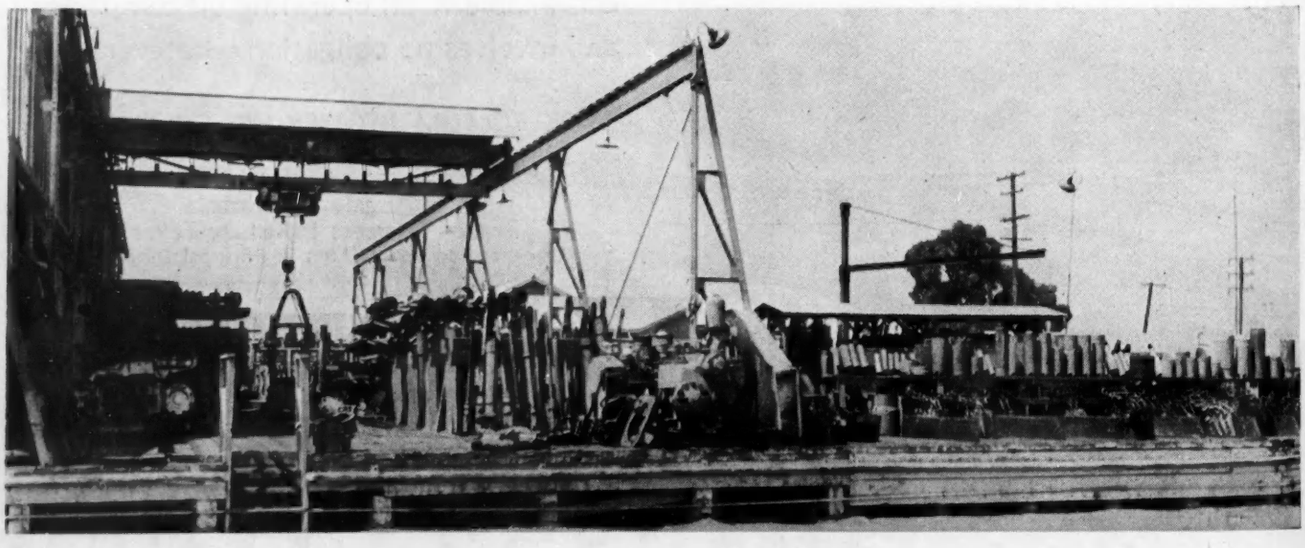
General Petroleum Corporation keeps a perpetual inventory with cards, but takes a physical inventory yearly. The record is kept by description and stock number, and about 4500 items are carried in the main warehouse. The company operated 12 warehouses 10 years ago, but now maintains only the general warehouse at Vernon and smaller warehouses at Wilmington and Taft.

The company makes a special effort to anticipate casing needs from 30 to 90 days ahead of suggested delivery. This plan has favorably affected inventories of tubular goods and has made possible the delivery of casing from the Eastern mills on schedule. Production engineers recommend the future delivery of casing, orders being largely based on field operations under way or anticipated.

Richfield Oil Company's warehouse inventory is taken annually by the accounting department, but the perpetual inventory system is followed between actual counts. Items carried are listed or itemized by group name, and each group is subdivided into different types or items. From 5000 to 7000 items are carried in the various company warehouses.

When casing is needed, the production department calls the purchasing department and asks for delivery of the casing in a few hours. A general store department or warehouse ticket is issued and sent to the warehouse. If the casing is not carried in stock, the warehouse makes requisition and sends it to the purchasing department.

Large supply houses have entered all important fields in California during the past few years, and oil companies have eliminated most of their outlying warehouses because of this increased service to them.



One platform of heavy equipment carried in stock by Union Oil Company at Santa Fe Springs.

WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

Europe and Oil

All four powers lacking in domestic production . . .
Germany's ally cannot protect vulnerable spot . . .
Czechoslovakia's supporters have plenty of oil

ALTHOUGH the four-power conference in Munich September 29 was hailed in several nations as a step which had prevented war in Europe, or possibly another world war, not a few commentators believe that the battle royal of Europe, and possibly the world, has merely been postponed temporarily, and not averted.

Many feel that the present Czechoslovakian crisis is but a forerunner to other crises to follow when Hitler, chancellor of Germany, goes to work on the inference of the four-power pact that hints that colonial concessions to der fuehrer may have to be made to forestall war as soon as he is firmly entrenched in Czechoslovakia. Some are of the opinion that Czechoslovakia may still be anti-Hitler when such a time arrives.

Therefore, it will be of interest to look at the situation from the oil angle, as it exists today, in the event that the nations involved find arbitration and conferences futile after all in satisfying Hitler's demands.

Barring a lightning fast campaign, one that could be concluded before exhaustion of currently filled storage tanks and reservoirs for petroleum products, the impending war might afford an opportunity for substantiation or disproval of the military adage that "He who has oil wins the war."

And if there is anything to that saying, then Czechoslovakia, Germany, France, England and Italy each may possibly find itself in an uncomfortable predicament.

Of the two on the verge of immediate armed conflict, Germany and Czechoslovakia, neither has sufficient domestic crude oil production for peace time needs, much less for war needs. How much either has stored away in crude and refined form has long been a state secret.

Both England and France, who threatened to enter the war if Germany invaded Sudetenland by force, are woefully lacking in domestic crude output. Figures on storage facilities in these latter two countries are not available.

The Moral Allies

Either of two nations which have indicated moral support of Czechoslovakia's cause could easily fuel the Czech army's motor driven units from excess domestic production. They are Roumania and Russia. The former is a large exporter. The latter, while consuming most of her production for industrial and agricultural engines, could fuel the Czech army if her moral support extended that far.

The one nation that has indicated it would ally itself with der fuehrer is Italy. She had to depend on imported fuels for army units and planes in the recent Ethiopian brawl.

So, if there is a war, and if it is not finished in an incredibly short time (some so-called military experts have even put the limit at less than a month), the odds favor Czechoslovakia from the oil angle.

England, who temporarily denies itself the use of Mexican oil as a result of expropriation of oil properties of British nationals in Mexico by President Cardenas, probably would not hesitate to again use Mexican oil for navy fuel in case of a war, even though to do so might be a bitter pill to swallow. And Mexico, despite the severance of diplomatic relations with England, probably would be glad to dispose of the necessary fuel to England, for John Bull could pay cash, a thing Mexico's current customers seem not inclined to do, and Mexico needs cash imperatively.

Taking the foregoing nations alphabetically, a general survey of their respective domestic crude situations shows the following:

Czechoslovakia

Czechoslovakia is producing less than 200,000 barrels annually, although production lately has shown an upward trend. Gbely in western Slovakia is the main field, producing about 12,000 tons annually. The oil there, however, is heavy, with a specific gravity of 0.93. It is non-paraffinous, contains no gasoline or kerosene, and lubricants made therefrom are of low quality. Hodonin field in Moravia produces about 10,000 tons annually, most of which is somewhat similar to the Gbely crude. A small amount of Hodonin's yield, though, is 82.5 gravity (specific) and contains some gasoline, kerosene and paraffin. The production of crude in Czechoslovakia in proportion to the imports of crude is about in the ratio of 18 to 403. She has been getting most of her gasoline from Poland and Rumania. Poland probably would be pro-German in a war, while imports from Rumania could be expected to continue. Lubricant imports have come mostly from the United States. The annual refinery capacity of all plants in Czechoslovakia is about 900,000 metric tons, a capacity which would prove pitifully small in the event of war.

Czechoslovak production of crude petroleum in July amounted to 1521 metric tons, representing an increase of 2.5 percent, as against 1484 metric tons in June, but a decline of 9.7 percent as compared with 1684 metric tons in July of the previous year.

Production of natural gas totaled 129,234 cubic meters in July, or a drop of 16.9 percent, as compared with 155,517 cubic meters produced in June, but a gain of 15.9 percent as against July, 1937, when 111,502 cubic meters of natural gas was obtained.

Cumulative figures on crude petroleum output for the period from January through July indicate an appreciable advance of 10.3 percent over the same period of 1937, the total output of crude petroleum aggregating 11,092 metric tons and 10,058 metric tons, respectively, during the first seven months of 1938 and 1937. Likewise on a seven-months basis, the output of natural gas improved 17.8 percent from 811,906 cubic meters in 1937 to 956,860 cubic meters in 1938.

Source of information for the above figures is the Czechoslovak ministry of public works.

England

Notwithstanding encouraging developments attending recent wildcat efforts in Scotland, England's domestic crude oil production today is hardly enough to grease the nation's pocket watches. It might barely be enough to fuel an admiral's gig if it were in

steady service. In the past she has relied on imports, crude and refined, from South America, Mexico, United States, Iran and the East Indies. The latter two might be blocked off as suppliers in wartime by Italy or a German fleet in the eastern waters. Tankers from the Americas probably would be more successful in discharging cargoes in England. Trinidad and Canada are her more important colonies producing on this side of the Atlantic.

While Czechoslovakia's refining capacity is too small to cope with the needs of its fighting units, England has great capacity at home and in its several colonies. While her home capacity is only about 115,000 barrels daily from some 14 plants, the aggregate capacity of colonial refineries is considerable.

In 1937 England imported 15,000,000 barrels of crude and about 5,300,000 barrels of gasoline.

France

France is little better off than her neighbor across the channel in the matter of domestic crude production. Pechelbronn, her lone commercially producing oil field, yields only 245,000 barrels annually, or about 66 percent of one day's production from East Texas field. In the matter of her colonies she is still without significant reserves. Morocco's Tselfat-Petitjean field, the most valuable of her outside reserves, contributing only 42,000 barrels per annum at present. France's only direct interest in a sizeable foreign source is her 23 percent holding in Iraq Petroleum Company, production of which would have to brave the hazards of Mediterranean crossing in event of war. Iraq furnishes over two-thirds of the crude France uses, the remainder coming largely from United States, Colombia, Peru and Venezuela in the order named. Twenty plants in France can handle 150,000 barrels of crude daily and are equipped to make practically any petroleum product. Last year she imported more than 45,000,000 barrels to put through them.

Germany's Weak Link

Germany's dependence upon foreign sources for petroleum products has been one of the weakest spots in its drive for economic independence and today constitutes a most vulnerable one in case of war. Her annexation of Austria, and the small production obtained thereby, did not better the situation. That is why her efforts at developing synthetic products in the past few years have been so frenzied and have been carried on in the face of uneconomic results. While production in Germany increased during 1938, the domestic production of mineral oils (natural and synthetic) continues far less than 40 percent of peace time requirements. A survey gives her credit for 38 refineries with total capacity of 60,000 barrels daily. It is estimated 1938 crude oil production in Germany will total less than 4,000,000 barrels. Of crude oil alone she imported more than 5,124,000 barrels in 1937. Her gasoline imports for that year exceeded 8,995,000 barrels.

Italy Short, Too

Italy's dilemma over a possible hitch in supply of crude and refined oil products during her foray into Abyssinia still is fresh in memory. At that time it was generally conceded that the invasion would have been halted if exports of oil to Italy had ceased. Her efforts to increase synthetic production of oil products have paralleled those of Germany, though on a much smaller scale. Italy's peak year in crude oil production was 1932, when 30,000 tons were recovered. It has since declined consistently, despite sporadic wildcatting for new fields. Her imports of crude, on the other hand, have consistently increased to satisfy the current refinery capacity of 30,000 barrels per day, representing the aggregate capacity of 11 plants. Even though the trend in Italy for the past few years, especially since the Ethiopia expedition, has been to increase refinery capacity at home, she still is essentially an importing country; 1937 imports amounting to 6,550,000 barrels of crude. Therefore she, the most powerful ally of Germany in the current Czechoslovakian dispute, can do little to strengthen Germany's vulnerable spot.

Rumania Could Help

Rumania, for years the heaviest supplier of petroleum products to Italy, appears to be in sympathy with Czechoslovakia, possibly fearing that failure to check Hitler today might see Nazi influence striving for control of Rumania tomorrow. And Rumania is one of the world's great producers of crude oil. Its 55 refineries with an aggregate capacity of 250,000 barrels per day rate it also as a great refining country. She produced 54,142,600 barrels in 1937, less than a fourth of which was needed to satisfy internal demands. The balance available for export across the boundary into Czechoslovakia would more than satisfy the latter nation's war time needs.

Russia Powerful

Only the United States produces more oil than Russia. The Soviets got credit for producing over 196 million barrels last year. Its 14 refining districts have a rated aggregate capacity of 1,000,000 barrels daily. Russia doesn't like the Nazi trend and has said so. She has indicated sympathy for Czechoslovakia and promised moral support.

Tupungato well furnishes new horizon for Argentina

Yacimientos Petroliferos Fiscales' T-19, Tupungato field, has opened a new and apparently prolific horizon in west central Argentina. After blowing out at 1790 meters from Rhetic (lower Jurassic) and catching fire, it was extinguished in a few days and is currently making 1500 barrels daily of 33 A.P.I. gravity paraffin base oil.

Previous production from Tupungato has been from the Calchaqui of Tertiary age. Of the 18 wells drilled prior to T-19, only 9 were producers. The Cretaceous had been tested by them with indifferent success. Total production of the field up to the end of 1937 was 53,000 barrels, all from the Tertiary.

It was erroneously stated in the issue of September 12 that Tupungato field, province of Mendoza, was a new field. Only the Rhetic horizon is new, but it alone promises to contribute considerable domestic production during the remainder of 1938.

Wants British Columbia to authorize drilling

Premier T. D. Pattulla, speaking at Kelowna last week, announced that he would ask the British Columbia legislature for authority to engage in oil exploration in the Peace River district of the West Canadian province. Geological surveys reveal the area favorable for oil exploration, he declared.

"Recently the Turner Valley oil field in Alberta has been developed to such an extent that it has become one of the largest in the world," Premier Pattullo added. "Geologists tell us there are just as good prospects in British Columbia."

July peak month of 1938 in Trinidad production

Nelson Betancourt, acting inspector of mines, advises Trinidad's crude oil production in July amounted to 1,500,171 barrels, replacing May (with a production of 1,481,285 barrels) as the peak month of 1938.

Trinidad's monthly average production for the last six months of 1937 was 1,368,894 barrels. Thus far in 1938 only one month, February, has fallen below that figure, the other six months being above it sufficiently to record a monthly average of 1,421,861 barrels through July.

Monthly production figures follow:

January	1,378,021
February	1,304,819
March	1,438,436
April	1,418,825
May	1,481,285
June	1,431,476
July	1,500,171
Seven months total	9,953,033

Australian governments drilling deep wildcat

On the Romawi homestead allotment 12 miles south of Bairnsdale in the Sale-Bairnsdale-Lakes Entrance district of Gippsland, Victoria, the mines department, in conjunction with the Commonwealth of Australia, is drilling what promises to be the deepest test yet put down in that part of the continent. The two governments are sharing equally the expense of the project. The rig is furnished by the commonwealth government and the Victorian mines department is furnishing the crew. A modern rotary, capable of going to 5000 feet, was purchased from the United States for the job. Depth record for the neighborhood is reported to be 2740 feet.

Location for the wildcat was selected by Dr. W. G. Woolnough, W. Baragwanath and J. W. Binney. It is at the apex of a triangle, the base of which is formed by a line joining the Goon Nure and Pelican Point wells.

Chosen Petroleum Company to wildcat in north China

Chosen Petroleum Company, known in northern China as Chosen Sekiyu Kaisha, has increased its capitalization from Yen 10,000,000 to Yen 20,000,000, partly for the purpose of exploring for oil in Chosen, partly for increasing the capacity of the only refinery in Chosen.

MEN IN THE INDUSTRY'S NEWS

W. K. MORRISON, division production manager of Shell Petroleum Corporation, Tulsa, has been assigned to make a special survey for the concern. His duties as production manager have been taken over temporarily by C. R. Rickel, district superintendent for Western Kansas, Great Bend. The post in Western Kansas will be under the supervision of W. M. Gholson, superintendent of the Greenwich-Wichita district.

C. E. HAMILTON, geologist with Harper-Turner, Inc., was elected president of the Oklahoma City Geological Society September 24 to fill the vacancy left by Bruce Cury, Carter Oil Company, to other territory. At this meeting J. T. Richards, Gulf Oil Corporation; John Van Dall, Magnolia Petroleum Company and Roland Laughlin, Laughlin - Simmons, were named as the local committee to make arrangements for the annual convention of the American Association of Petroleum Geologists, which will be held in Oklahoma City in March, 1939.

C. G. CARLSON, consulting geologist of Tulsa, has opened an office in Mattoon, Illinois. Carlson will spend half his time in the Illinois office and half in his Tulsa office.

H. B. FELL, Ardmore oil producer and executive vice president of the Independent Petroleum Association of America, suffered a broken leg at his home September 27.

M. M. KORNFELD, consulting petroleum geologist of Houston, enlarged and transferred his office to 506 West Building on October 1, where he will continue his geological, paleontological and valuation work.

E. H. FINCH, San Antonio, Texas, who has been in Southwest Africa, Portugal and England, returned to New York last week on the Queen Mary.

JOHN CRUDE, district paleontologist for Amerada Petroleum Corporation, Houston, is on vacation.

DR. GEORGE C. BRANNER, Arkansas state geologist, was in Washington last week attending a session of the planning technicians' conference of the National Resources Committee.

BART DeLAST has been placed in charge of the engineering department for Pure Oil Company at Olney, Illinois. He was formerly with Gulf Oil Corporation.

H. L. DAVIS will be superintendent of Illinois headquarters being established at Flora for Williams Brothers Construction Company, pipe line contractors.

KIROL R. HOLM, vice president of Winona Oil Company, Tulsa, is studying Illinois oil fields, making his headquarters in Mattoon.

FRED KROGER, independent operator, was in Flora, Illinois, last week arranging for development of his block of leases northeast of that city.

Oil Weekly Editor to South America

Wm. V. Gross, foreign editor of The OIL WEEKLY, leaves this week on a trip covering the important oilfields of Trinidad and South America.

Gross will return before the first of the year and in the course of his trip will visit the most important operations underway in South America. The trip will be made by plane.

Gross has been associated with The OIL WEEKLY staff since 1923. Formerly he was district editor of the Gulf Coast area, later manager of the West Coast office of the company and since 1934 has been foreign editor of The OIL WEEKLY. He is a director and assistant secretary of The Gulf Publishing Company, publishers of The OIL WEEKLY.

E. J. SADLER, New York, vice president and production manager of the Standard Oil Company of New Jersey, and C. H. Lieb, former president of Carter Oil Company, met with Illinois officials of Carter Oil Company in Mattoon last week from which point they undertook a field inspection tour.

E. P. RUSHMORE, for several years general agent of Gulf Oil Corporation at Denver, Colorado, has been appointed manager of the land, leasing and scouting department at Tulsa.

E. W. SCUDDER, staff geologist in the Denver office of Gulf Oil Corporation, has been transferred to Tulsa as assistant to W. B. Wilson, chief geologist.

R. W. LONGMIRE, for several years past assistant to W. B. Wilson, chief geologist of the Gulf Oil Corporation's division at Tulsa, has been transferred to Indianapolis as assistant to B. F. Hake, regional geologist of the Gulf Oil Corporation's eastern production division.

DIED:

J. FLETCHER FARRELL, vice president, treasurer and a director of Consolidated Oil Corporation, died at his home in Bronxville, New York, September 25 after a protracted illness. He had been associated with the company since April, 1916 and in August of that year was elected vice president and treasurer of Sinclair Oil & Refining Company.

Farrell, after leaving school at Paris, Missouri, where he spent his youth, began his business career with the Paris Savings Bank of which his father was president. He was engaged in banking until he joined H. F. Sinclair upon incorporation of the properties that came under control of Consolidated Oil Corporation. He was assistant treasurer of Missouri in 1901. After three years he became a representative of Third National Bank of St. Louis and in another three years was elected one of its assistant cashiers. In 1910 he was elected vice president and director of Fort Dearborn National Bank of Chicago and remained there until his connection with Sinclair Oil & Refining Company as vice president and treasurer. He served continuously in those positions until 1930 when the merger of Sinclair Consolidated Oil Corporation and Prairie Oil & Gas Company brought formation of the Consolidated Oil Corporation in which he became a director.

He also was a vice president and director of the Mexican Sinclair Petroleum Corporation, Sinclair Navigation Company, Pierce Oil Company, S. A.; and Sinclair Cuba Oil Company. Outside of the petroleum industry he was vice president and director of the Merchants and Manufacturers Securities Company, Domestic Finance Corporation and Continental Illinois National Bank and Trust Company, Chicago.

CHARLES O. NOBLE, drilling contractor in 1902 for the discovery well in the Evangeline field, Louisiana's first oil pool, died at Lake Charles, Louisiana, September 21. A leader in oil development in South Louisiana, he later formed a partnership with the late J. A. Gardiner which resulted in discovery of the Vinton field, and was also active in development of the Edgerly, Hackberry and other oil fields.

CHARLES MONG, 68, active in oil development for 25 years in Greene County, Pennsylvania, died at his home in Waynesburg September 21 following a heart attack.

CHARLES E. FOSTER, JR., in charge of the production department at the Titusville, Pennsylvania, plant of the Cities Service Company and only son of Charles E. Foster, vice president and general sales manager for the company in Pennsylvania, was found dead in his bed in an apartment in Titusville September 25. Fumes from an open stove were believed responsible for his death.

SIBEDE OLEN ADKINS, 35, oil field worker of Robert Lee, Texas, died September 19 in a hospital at Olney, Illinois, following injuries suffered a day earlier at a well in Decker Township, Richland County.

CAPT. JOSEPH O. WILLIAMS, marine superintendent of Mene Grande Oil Company, died recently in the company's hospital at Bella Vista terminal, near Maracaibo. Capt. Williams had been connected with the Lake Maracaibo "mosquito" fleet from the beginning of its service in 1924. He personally delivered the first of the specially designed boats to Maracaibo, where he lifted the company's first cargo of oil and transported same to Las Piedras terminal, at which point oil is loaded into ocean-going tankers. In 1927 he was made assistant marine superintendent, and he took command of the fleet as marine superintendent in 1932. He is survived by Mrs. Williams and five sons.

THE WEEK'S NEWS SUMMARIZED

Markets

Prices in the oil industry, from well to service station, continued to work lower last week, although latest statistics showed a continuation of the generally favorable trend of current operations and inventories.

The crude oil market, which had suffered several local price reductions in recent weeks, showed further weakness when Illinois and Kentucky oils were slashed 10 cents a barrel. Production in the two districts now amounts to nearly 100,000 barrels daily, and is increasing rapidly. This, coupled with its advantageous position near large consuming centers, has placed the national crude oil price structure in its greatest danger since last May. There is fear that Mid-Continent prices may be cut to offset the Illinois-Kentucky reductions.

The main reason given for the new price cuts is the weakness of the gasoline market. Last week this product continued to slide to lower levels. Tank wagon prices were reduced ½ cent a gallon in Standard of Ohio territory, following a¼ cent a gallon cut in Oklahoma. Chicago and Oklahoma tank car postings declined ⅛ to ½ cent a gallon.

Meanwhile, however, the inventory position of the industry showed further improvement. Gasoline stocks were reduced 600,000 barrels and now are but 4.5 percent larger than a year ago. Crude stocks dropped 1,500,000 barrels below their already 15-year low.

Capitols

Spurred by recent war scares in Europe, the War and Navy Departments are expected to renew their efforts to get Congress to enact legislation claiming title for United States Government to submerged oil fields off the California Coast, and possibly extending to the Gulf Coast.

Oil conservation was the principal subject discussed at the National Conference of Governors, held in Oklahoma City and Tulsa last week. Illinois promised to have conservation laws after the next session of its legislature.

A survey to determine all East Texas wells that are making water, pumping, using air-gas lift, or are incapable of producing their allowable has been ordered by the Texas Railroad Commission. Water intrusion is increasing rapidly, and it is felt some solution to the problem must be found at an early date.

The Texas Railroad Commission has ordered more thorough sampling of tank bottoms in the East Texas field before they are tendered and moved into commerce.

The prospect for rejuvenating hundreds of wells by water flood drives, and a spread of this process application, particularly in North Texas, was indicated at a Texas Railroad Commission hearing last week. Two applications for permits to utilize water displacement on dormant properties were being heard, but interest laid in the report of the success of a previous water flood project in Wichita County.

Courts

Rebuking government attorneys for raising a point after the jury verdict in the anti-trust suit at Madison, Federal Judge Patrick Stone last week denied a prosecution motion to expunge and rescind a part of his order of July 19 in which he freed 1 oil company and 10 oil company officials. Judge Stone declared he definitely was of the opinion there was no substantial evidence indicating participation in the conspiracy by those he dismissed, and cited numerous court decisions to support his ruling in favor of the defendants. He stated objections should have been raised, if at all, before the case went to the jury.

Compact

A proposal that the Interstate Oil Compact Commission's authority be enlarged so it could allocate output between states ran head-on against the bulwark of state's rights at the commission's quarterly meeting last week. E. O. Thompson, chairman of the Texas Railroad Commission, was reelected chairman of the compact.

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Market Situation

Fear for all Mid-Continent schedules created by further reductions in gasoline and crude prices, although both gasoline and crude stocks reduced

Markets weak in wake of price reductions

The oil industry's markets are very unsteady, from well to retail outlet, following the disturbing reductions last week in prices of crude oil and refined products.

Although it had been hoped previously that crude oil prices would hold generally at the established levels, that hope began to diminish greatly last week when a more significant "local" crude cut was added to the various district reductions of the several preceding weeks.

The new crude price reduction, a 10 cent cut for Illinois, Princeton (Indiana), and western Kentucky, appeared especially ominous, because it threatened to precipitate general downward revisions throughout the Mid-Continent.

The Illinois crude is directly competitive with oils of Oklahoma, Kansas, North Texas, and other districts of the Mid-Continent, being of similar gravity and content; and even before the price cut it held an advantage over the crudes of districts west of the Mississippi, in the form of lower transportation charges in reaching the consumers of the Middle West.

The Illinois reduction also appeared particularly ominous because it represented another instance of price cutting that already had affected various districts throughout the United States, including the East Texas field; Lisbon field, North Louisiana; Smackover, Arkansas; Jennings, South Louisiana; some fields of Southern Oklahoma; some Rocky Mountain States fields; and the fields producing Pennsylvania grade crude.

Illinois crude cuts are blamed on gasoline prices

The Owensboro Corporation, in announcing its general 10-cent reduction of all Illinois crude formerly bringing a price of $1.35 per barrel, declared weakness of the gasoline market was to blame.

The company's statement pointed out that when Illinois prices were advanced to $1.35 a barrel early in 1937 that Oklahoma refinery prices on gasoline were about 6 cents a gallon. Today this same grade of gasoline, the statement continued, is selling for 4.875 cents a gallon, or almost 19 percent less. Retail and dealer prices of gasoline have declined by about the same extent.

"Considering that over 50 percent or about 22 to 23 gallons out of each 42-gallon barrel of crude oil typically is made into gasoline, this means that the gasoline content from a barrel of crude is today bringing at least 20 to 25 cents a barrel less than in 1936 or the early part of 1937." In addition it was pointed out that other refined products also were selling at lower prices.

"These reductions in refined prices reflect," the statement concluded, "both the increased available supply of crude oil in almost all areas and the reduction in demand for refined products."

Gasoline Market Weak

While the Illinois crude cut was caused partly by the steadily increasing production of the new flush fields of the southern portion of the state, it resulted primarily from the continued decline of gasoline prices, wholesale and retail.

The gasoline market has persistently lost ground in the past several weeks, and last week brought only a continuation, if not an acceleration of the declines.

Furthermore, the Illinois crude cut served only to increase the unsteadiness of the gasoline market, and prices sagged badly, as buyers operated strictly on a hand to mouth basis, anticipating that prices might work even lower. Meanwhile, some refiners and re-sellers also were greatly concerned over the outlook and consequently were willing to make exceptionally large price concessions to move their inventories.

The unfavorable price developments largely overshadowed the latest weekly statistics of the industry, which normally would have been at least mildly encouraging. Also largely overlooked was the prospect of continued strict curtailment of crude oil production in October.

Prices of gasoline and crude weaken further

Prices in the oil industry, from well to service station, have continued to work lower.

The crude oil market, which had suffered several local price reductions over the past few weeks, showed further weakness when postings were reduced 10 cents a barrel, effective September 27, in Illinois; in the Princeton, Indiana, district; and in Western Kentucky. The new price for Illinois and Princeton crudes is $1.25 a barrel, and that for Western Kentucky is $1.20.

Owensboro Corporation, pipe line subsidiary of Standard Oil Company of Ohio, cut prices to $1.25 in all areas where it had been paying $1.35. The company has been paying $1.25 for Centralia, Illinois, crude, except in the congested area, where it has been paying $1.10.

The Ohio Oil Company effective September 27 posted these prices: Illinois $1.25, Princeton $1.25, Illinois Basin $1.25, Western Kentucky-Owensboro $1.20, all 10 cents lower than previous postings.

Carter Oil Company has reduced the price of Loudon crude, Illinois, 10 cents a barrel to $1.25. The company became a purchaser in Illinois only on September 1.

Fordsville Gathering Line, Inc., on September 27 reduced the posted price for crude in Western Kentucky to $1.20 per barrel, representing a reduction of 10 cents a barrel in all areas except the Birk City pool of Henderson and Davies counties, and a cut of 5 cents a barrel in that area.

The change marks the second for West Kentucky crude since June 23 when prices were lowered from $1.40 for Western Kentucky crude and from $1.35 for Birk City crude.

Commenting on the new prices, the company's statement said the same figure for both Western Kentucky and Birk City crude would stand "pending further study of the refining value of the Birk crude from the standpoint of its effect on refinery equipment and its asphalt making qualities."

In the Jennings field, Louisiana Gulf Coast, Gulf Refining Company and Stanolind Crude Oil Purchasing Company now are buying crude on a gravity scale that extends from $1 for 31 gravity and below and $1.02 for 32-32.9 gravity, by 2 cent differential for each degree of gravity, to a top price of $1.18 for 40 gravity and above, the new schedule having become effective for the Gulf company on September 23. The new schedule left 23 gravity oil unchanged at $1 a barrel but provided increases of 2 to 8 cents a barrel for heavy crudes, below 23 gravity, and reductions of 2 to 16 cents for the lighter oils, above 23 gravity. Previously, the Gulf schedule began at 92 cents for below 20 gravity, and 94 cents for 20-20.9 gravity, and extended by 2 cent differential to a top price of $1.22 for 34 gravity and above.

Tank Wagon Prices Cut

Standard Oil Company of Ohio effective September 26 reduced its tank wagon prices to consumers and to resellers one half cent a gallon generally throughout Ohio on its three grades of motor gasoline. Service station prices also were reduced a similar amount at points where the company still operates its own stations. Effective September 28, the same company announced a ¼-cent a gallon reduction in its posted tank car gasoline prices for shipment anywhere in Ohio, following a similar decline in Oklahoma gasoline September 26.

Tank Car Prices Down

Gasoline tank car prices in the Oklahoma and Chicago markets at the middle of the past week were lower than in the previous week on all grades. The declines within a week ranged from ⅛ to ½ cent a gallon, depending on the grade and district in which the sales occurred. The larger declines occurred in the Oklahoma market, where the higher octane materials were most seriously affected, with reductions of ⅛ to ½ cent a gallon, although low octane grades were reduced as much as ¼ cent a gallon. The declines in the Chicago market were mostly reductions of ⅛ cent in maximum prices.

Natural gasoline, grade 26-70, was

[*Continued on page 65*]

Compact Meeting

Proposal that compact commission allocate oil output among states opposed . . . Thompson is reelected head . . . To seek compact extension.

Compact members do not want allocation task

Proposal to give the treaty under which the Interstate Oil Compact Commission functions authority to allocate output as between states ran head on against the bulwark of states' rights in the preliminary session a day previous to the quarterly meeting of the commission in Tulsa September 29.

E. R. Sloan, chairman of the Kansas Corporation Commission and Kansas member on the compact, brought the proposal before the executive session. From both officials as well as advisers from Texas came opposition that left no doubt that such a change in the federal statute under which the treaty exists would see a breaking up of the compact.

As a result that the compacting states voted to seek an extension of the federal statute under which the compact exists. Colonel E. O. Thompson, member of the Texas Railroad Commission, was reelected chairman of the compact and Hiram M. Dow, lieutenant governor of New Mexico was elected vice chairman. Fort Worth is slated to get the next quarterly meeting in December.

Despite the rebuff in the committee session, E. R. Sloan, chairman of the Kansas Corporation Commission and representative of that state on the compact commission, reiterated his belief that the compact must find some means of leveling off inequalities between the output of states. He is chairman of the committee to draft the resolution seeking passage of federal legislation to extend the compact another two years after 1939. Before the commission at its session September 29 he reported that the committee had not had time to make a final report.

Dissatisfaction over present limits of the compact treaty get back to the conditon in Kansas, whose oil fields have potential output in excess of 3,500,000 barrels daily, while the estimate of demand for Kansas as prepared by the United States Bureau of Mines. This estimate does not consider the relationship of potentials of the several states in arriving at totals. At Wichita last April, Walter A. Huxman, Kansas governor, assailed this condition and classed the compact as a useless commission. Since then he has reiterated this opinion. The Kansas Corporation Commission, however, has gone on record as favoring retention of compact membership although the governor has threatened to withdraw the Kansas membership unless the statute is changed.

The effort to get the change was in an executive session whose proceedings were not made public. Enough of the proceedings became common knowledge to justify the conclusion that Texas, Oklahoma, New Mexico and Colorado are opposed to a change in the treaty to allow federal allocation of state output. Illinois, the sixth member of the compact, has no conservation law but its governor, Henry A. Horner, attended his first compact meeting at Tulsa and expressed the opinion that a state law will be passed at the next session of the legislature.

Despite the fact that the preliminary executive committee session came to no voting, it overshadowed the regular compact meeting the day following. At this meeting the status of oil development in Illinois was outlined by Dr. A. H. Bell of the Illinois Geological Survey. He estimated that 200,000,000 barrels of oil have been added to the nation's total in the new oil fields uncovered in the last two years, while the old fields are capable of producing another 100,000,000 barrels under secondary recovery methods. Illinois consumption is still more than twice the amount of its daily output.

Allowable Picture

Although production restraint loosened slightly, continued storage reduction indicated as October allowables stay below Bureau's demand estimates.

October schedules indicate continued stock reductions

United States crude oil production will continue under unusually strict curtailment again in October, despite some loosening of restraints that prevailed in September. Consequently, it probably will be possible for the industry to further improve its inventory situation, after having made large withdrawals of both crude oil and gasoline from storage in the past several months.

This promising outlook is indicated by the new schedules of crude production allowables of the leading producing states for October.

The six top states, producing over 90 percent of the national crude output, have prescribed for October aggregate allowables 176,808 barrels a day, or 5.8 percent, under the Bureau of Mines estimates of market demand for domestic crude in those states.

This program is less strict than that for September, when the six states were 292,592 barrels, or 9.4 percent, under the market demand estimates.

Largely responsible for the difference for October is the fact that the Texas Railroad Commission ordered continuance of Saturday and Sunday shutdowns only through the first four week-ends of October and not through the final week-end, whereas the two-day shutdowns prevailed throughout September.

Nevertheless, Texas output is scheduled to be lower than the indicated demand for the month, and underproduction is provided for also in the allowables of Oklahoma, New Mexico, and California, although the latter state has consistently failed to hold actual production within the limits set under the voluntary proration program.

Kansas adopted the Bureau of Mines estimate of demand as its October allowable, and Louisiana exceeded its allocation of demand by 12,070 barrels daily, or 4.8 percent, in fixing October field quotas.

Details of allowables and demand, by states, appear in an accompanying table.

State Allowables Again in October Are Under Bureau of Mines Estimates of Demand for Domestic Crude—From Wells or Storage

(Barrels Daily)

STATE	Bureau of Mines Forecast of Demand	State Allowable Beginning of Month	Excess or Deficiency of State Allowable	Percent Excess or Deficiency
California	619,000	*615,000	— 4,000	— 0.6
Kansas	163,400	163,400	.....	....
Louisiana	248,400	260,470	+ 12,070	+ 4.8
New Mexico	109,200	103,800	— 5,400	— 4.6
Oklahoma	523,600	428,000	— 95,600	—18 2
Texas	1,359,000	†1,275,122	— 83,878	— 6.2
Total Six States	3,022,600	2,845,792	—176,808	— 5.8
Other States	344,200	.....	.....	....
Total United States	3,366,800	.....	.....	....

* Recommendation of Central Committee of California Oil Producers.

† Average daily production permitted for 7 day week as a whole; actual daily allowable higher, but fields shut-in on Saturdays and Sundays.

Oil at the Capitols

Agitation for government ownership of fields in ocean revived by war fears . . . Hearing testimony indicates spread of water floods to Texas.

War scare revives Navy yen for tideland oil

Legislation claiming title for the United States to the submerged oil fields off the California coast, possibly extending to similar fields in the Gulf of Mexico, is expected to be asked of Congress next session, as part of the War and Navy Departments' program for furtherance of the national defense, it was learned in Washington this week.

Spurred by recent developments in Europe and foreseeing the inevitability of war, sooner or later, in which every major nation of the world will be involved, military experts of the administration, determined that the United States shall not be caught unprepared as it was in 1917, are working out plans for increases in the size of the army and navy and, following the practice adopted in Europe, the provision of adequate reserve supplies or sources of essential war commodities.

The failure last year of the legislation asserting title to the offshore lands is not considered by navy officials as conclusive. The bill last year failed as a result of a combination of circumstances, not the least of which was the political situation and also included the fogging of the issue by the injection of such factors as the possibility that the government might assert title to the amusement piers at Atlantic City and to waterfront developments along all coasts if its right to the shore lands was upheld.

While no details have been divulged as to the new legislation—if, in fact, they have been worked out—it is expected that the new bill will concern itself only with the California offshore fields, but it is possible it may cover also the Gulf submerged oil lands, which, however, the Gulf states claim to be theirs under treaty.

Administration officials concerned with questions of the national defense are represented as unconvinced that the present Naval Oil Reserves would be adequate in the event of a prolonged war, while admitting at the same time that a considerable period would elapse before they could be exploited in volume.

In view of the tremendous amount of oil which would be used by army and navy in the event of a war, under modern conditions, outbreak of an emergency would immediately impose a great drain upon the commercial oil fields which they might not be able to stand for any great length of time if superimposed upon the greatly increased demands for domestic consumption which would be made by a war-driven country.

On the other hand, the longer a war is deferred, the less oil we will have in the ground, and much of the administration's policy of preparedness is based on the possibility that the need for oil will come in the future. Accordingly, if additional oil reserves can be acquired they can be tied up for years and held against that day when, commercial fields nearing exhaustion, the government may face an emergency need for oil which can be satisfied only from its own resources.

To survey East Texas water encroachment

A survey of the water well situation in East Texas between October 1 and October 15 has been ordered by the Texas Railroad Commission.

In this survey operators are requested to report on all wells that are making water, pumping, using air-gas lift or are incapable of making their allowables.

The results of the survey are awaited with unusual interest, as, at the last statewide hearing, the question of the effect of water production upon the East Texas pressures was again brought up by Railroad Commissioner Ernest O. Thompson.

Two water flood permits sought for North Texas

The prospect of rejuvenating hundreds of wells, particularly in the North Texas area, and perhaps in many other areas of Texas as well, was laid before the Texas Railroad Commission last week in two applications for permits to utilize water displacement or water drive in producing these dormant properties.

The applications were by Peterson and McCarthy for an Archer County lease and by Bell Oil and Gas Company for a Wichita County lease, but the interest lay in the report on the success of Peterson and McCarthy with their orignal water flooding project which is in Wichita County.

Other Applications Expected

When Peterson and McCarthy made their original application, many royalty owners and offset operators were opposed to the experiment, fearing that their wells would be killed by the water. The commission, nevertheless, granted the permit, and unless the signs fail, there will be a flood of like applications in the near future. H. L. Rugeley, representing the Peterson and McCarthy firm, told the commission sketchily what had been done. He did not have formal reports with him, hence most of the data he gave was from memory. He said that they drilled nine input wells on the lease which had 29 wells on it. It was not feasible to use any of the 29 wells for input, as the wells were drilled in the early days and probably would not have withstood the strain of water injection.

Today the wells are producing about eight times as much oil as they were when the flooding started two weeks ago, and Rugeley says that he can control every well on his lease by adding or deducting from the amount of input water in eight injection wells. These particular wells are producing from about 550 feet and the sand is uniform and presumably fairly permeable, although no records are available. Rugeley asserted that there was "no reason in the world" why most of the moribund wells in North Texas could not be treated in that same fashion. Bell Oil and Gas Company's application was prompted solely by the success of the Peterson and McCarthy project. L. H. Mack, representative of the company, said he hoped to get 1000 barrels an acre out of his Powell lease in the old Texhoma field which is now producing three barrels from 9 wells.

Expect early report from Pennsylvania investigators

A report of Pennsylvania's oil investigating commission will be made to the state legislature just as soon as a $20,000 appropriation for the committee pending before the legislature is passed and made available, Senator E. J. Thompson, a member of the five-man body, announced last week.

The committee had made considerable progress with its investigation before its constitutionality was successfully challenged last summer. A new measure recreating the commission was recently passed by the present special session of the state legislature and commission members reappointed.

Meanwhile, Senator Thompson revealed last week, the commission made use of "a number of Works Progress Administration projects" and has "already obtained most of the information needed to make a report to the legislature." The appropriation now awaited by the commission would be used to publish the report.

Order better sampling of East Texas tank bottoms

More thorough sampling of tank bottoms in East Texas before they may be tendered and moved into commerce is required under an order of the Texas Railroad Commission just issued. The order amends a previous tank-bottom order and rewrites Section "(B)" of Rule One (1) to read as follows:

"Rule 1, Section (B): A sample shall be taken from as many places as are available on the tank to be cleaned by means of a thief so constructed as to accurately show a true vertical section of the tank bottom being sampled, and the free oil which at atmospheric temperatures can be bled from the samples so secured after being properly settled shall be tested for the merchantable oil and according to Rule (c) of this Order. Merchantable oil shall be defined as oil which contains 2% or less of the BS&W, and is acceptable and transportable as pipe line oil by the pipe line company connected to the tank or tanks which are to be cleaned."

Oil in the Courts

Government motion to expunge and rescind court order freeing anti-trust suit defendants denied

Judge Stone stands pat on conspiracy trial ruling

Rebuking government attorneys for raising a point after the jury verdict in the "oil conspiracy" case tried at Madison, Wisconsin, last winter, Federal Judge Patrick T. Stone last week denied a prosecution motion to expunge and rescind a part of his order of July 19 in which he freed 1 oil company and 10 oil company officials following a jury verdict of guilty. The ruling cleared up one of the loose ends remaining after trial of the "first" indictment returned on charges of violating federal anti-trust laws 2 years ago.

Before giving the case to the jury last January, following a trial of four months, Judge Stone announced he would reserve rulings on defense motions to dismiss charges and for new trials to permit the jury to complete its work. A ruling on the motions would unnecessarily prolong the time the jurors would have to be kept in the custody of the marshal, as considerable study of the voluminous record would be required before a ruling could be made with respect to some of the defendants. Objections of government attorneys to the procedure should have been raised, if at all, before the case went to the jury, the court declared.

Two other parts of the July 19 order were not challenged in the motion denied by Judge Stone last week. They granted new trials to 3 companies and 15 individuals, and sustained the guilty verdicts against 12 companies and 5 individuals who were fined a total of $65,000. The latter part of the court's ruling has been appealed by defense attorneys.

New Judge for Second Trial

Federal Judge Walter C. Lindley of the district court at Danville, Illinois, will meet with attorneys in Madison on October 14 to set a date for retrial of the 3 companies and 15 individuals. Judge Stone will be unable to preside over the second trial because of the press of other business in the Western Wisconsin district.

"In the careful and full review of the record and study of the briefs filed on the motions before and after verdict," Judge Stone said last week, "the court was definitely of the opinion that as to most of the defendants dismissed by the order of July 19 last, there was no substantial evidence indicating participation in the conspiracy; and that as to the others the evidence adduced was clearly as consistent with innocence as with guilt, which raises the question of law for the court, not one of fact for the jury, and in such circumstances it becomes the duty of the court to grant the motions for a directed verdict. To do otherwise is clearly error."

Judge Stone cited numerous court decisions to support his ruling in favor of the defendants where the evidence was as consistent with innocence as guilt.

Delayed Ruling Justified

"The constitutional right of a defendant to a trial by jury requires that all questions of law be decided by the court and questions of fact by a jury," he continued. "It is just as important that the defendant be given the benefit of the one as of the other, and if he be denied one or the other, his constitutional right to that extent has been denied.

"At the close of the testimony, motions were made on behalf of each of the defendants for a directed verdict. While the court was of the opinion that in some cases the motions were well taken, the testimony was so voluminous, the exhibits so extensive in number, that it seemed impelling that no ruling on the motion be made until there was an opportunity for a thorough study of the evidence, and a careful and deliberate consideration of the law, with the aid of arguments and briefs.

Contested one-acre East Texas permit upheld

The oil well which led to a law suit attacking the validity of the entire East Texas proration order was the subject of an opinion by the 3rd Court of Civil Appeals at Austin last week.

The well is R. M. Wood's 1-acre offset to Rowan & Nichols in Gregg County. When this permit was granted, Rowan & Nichols filed several applications with the commission for adjustment of the allowable between their 25-acre tract and Wood's 1-acre tract on an acreage basis. Failing in this procedure, they filed the suit in Federal court. The appeals court opinion was concerned not with proration features, but with the question of whether the dispute over title to a piece of property precludes the Texas Railroad Commission from granting a permit to drill that property.

Both Rowan & Nichols and Shell Petroleum Company asserted title to the 1-acre tract; however, neither had filed suit to contest the title, and the Civil Appeals Court ruled that their "bare asserted right" was not enough to prevent the Railroad Commission from exercising its discretion in granting the permit to drill the well.

"We know of no rule," the court said, "which would require one holding the record title and in possession of property to bring suit to establish his title against one who asserts a bare claim, before he would be entitled to develop same. If such were the rule, then the record owner would be burdened with the duty of bringing suit to establish his title before he could use the property."

Pipe Line News

England now plans to lay line from Turner Valley field . . . Texaco awards Illinois line contract

England plans $16,000,000 oil pipe line in Canada

Following by two weeks an anouncement that a financially-capable German corporation had offered to construct a crude oil pipe line from Alberta fields to Vancouver, British Columbia, on the Pacific Coast of Canada, it was learned last week that the British government is giving consideration to comprehensive plans for oil development in Alberta.

Word reaching operators at Calgary, Alberta, was that the proposal would come within Britain's vast rearmament scheme and include construction of the pipe line, which preliminary engineering estimates indicate would cost $16,000,000 and extend over 1000 miles. Oil exported from Turner Valley and other fields now throttled by a lack of market would be used for naval purposes.

Sir Edward Ellington, British air marshal, recently visited Canada and while there was appraised of the value of West Canadian fields in the event of war, when, it was pointed out, British supplies in Iran and Iraq would be almost useless because the Mediterranean shipping route would be threatened. Supplies from Trinidad and Venezuela would not be sufficient for England's needs, and the British government has fallen out with the Mexican government over the expropriation of British concessions in that country.

Contract let for 71 mile Illinois line

Work is to start this week on construction of a 71-mile pipe line for The Texas Company to extend from the Lake Centralia field of Marion County, Illinois, to the company's refinery at Lawrenceville, Lawrence County. Contract was let last week to Williams Brothers Construction Company. The line will connect with the south Wayne County field of Illinois where The Texas Company also has production. Thirty-eight miles will be of eight-inch and 33 miles of 10-inch pipe.

Williams Brothers company last week established an Illinois office in Flora, Clay

County, with H. L. Davis as superintendent, from which point construction of the new line will be directed. Work is to be completed by November 5.

P.W.A. money behind gas line in Mississippi

Construction of a natural gas line to Centreville, Mississippi, from a trunk line running between Natchez, Mississippi, and Baton Rouge, Louisiana, is to be undertaken as a Public Works Administration project. Bids on material for the line, which will be approximately 10 miles long, are being received until October 10.

Wyoming-Utah gas line under construction

Construction work has been started by S. D. Bechtel Company, contractors, on a 53-mile 18-inch natural gas line to supplement the present gas transportation system between Green River, Wyoming, and Coalville, Utah. The new line is to be completed by November 20.

Building gas line from Chapel Hill to Wright City

Construction work is underway on the H. L. Hunt Interests' 16-mile pipe line from the Chapel Hill gas-distillate area, eastern Smith County, to the East Texas field. The line is scheduled for completion by mid-October, and will consist of 6⅝-inch welded pipe from Hunt Oil Company's lower Trinity producer at Chapel Hill to a tank car rack at Overton, then 5-inch to the Wright City sector of the giant field. The gas will be utilized for fuel for drilling and pumping wells, and later will be used for repressuring the Woodbine oil sand.

Plan natural gas for Huntington, Indiana

An application of the Northern Indiana Power Company to substitute natural gas for artificial gas in the city of Huntington, Indiana, a move which would save customers an estimated $9,400, was taken under advisement by the Indiana public service commission last week following a hearing.

The Huntington City Council has approved the change-over, passing an ordinance over the veto of Mayor Clare W. H. Bangs. L. B. Schiesz, president of Northern Indiana Power Company, presented the company's case before the commission.

Michigan pipe line ownership is changed

Simrall Pipe Line Corporation, major purchaser of crude oil in Michigan, an affiliate of Michigan-Toledo Pipe Line, and Standard Oil Company of Ohio, has sold out its Allegan County gathering and transporting system to Tri-Lakes Oil Company, a Standard Oil Company of Ohio subsidiary.

Tri-Lake will continue to purchase crude through the southwestern Michigan district, transporting by rail from Hilliards, to Chalsea, where crude will be handled from that point into Ohio by the Michigan-Toledo Pipe Line Company.

A. A. P. G. Meeting

Declaration that Permian Basin has 4,800,000,000 barrel reserve a highlight of geologists' meeting

The Mid-Year meeting of the American Association of Petroleum Geologists, held in El Paso, Texas, September 27 to October 2, featured the Permian Basin of West Texas and New Mexico. One of the highlights of the sessions came early, when the first speaker, Ed Owen, geologist for the L. H. Wentz Oil Division, San Antonio, proclaimed that at the present rate of production, 40 years would be required to get the 4,800,000,000 barrels of reserves located in the Permian Basin. This high figure came as a surprise in view of the American Petroleum Institute having estimated the entire United States reserve oil as totaling but 15 billion barrels. While admitting he might be optimistic, Owen cited numerous cases to back up his figures and predicted he was conservative.

Prior to the technical sessions, two pre-convention tours had been made. At the conclusion of the two-day technical sessions, a post-convention tour was planned.

Abstracts of most of the papers presented at the technical sessions follow:

Regional Geology and Oil Development of the West Texas Permian Basin

By ED W. OWEN,
Geologist, L. H. Wentz Oil Division

At the present rate of production, 40 years will be required to get the 4,800,000,000 barrels of reserve oil in the Permian Basin of West Texas and New Mexico. Ultimate recovery figures given for the West Texas Basin was 3,900,000,000 barrels. The production in that basin to date, 900,000,000 barrels, leaves a remaining reserve of 3,000,000,000 barrels, it was stated.

Figures given for New Mexico were: ultimate recovery of 1,200,000,000 barrels; production to date, 180,000,000 barrels; remaining reserve, 1,020,000,000 barrels.

For the Panhandle: ultimate recovery, 1,000,000,000 barrels; production to date, 315,000,000 barrels; remaining reserve, 685,000,000 barrels.

Estimate of the American Petroleum Institute of the oil reserve for the whole of the United States of 15,000,000,000 barrels was mentioned when Owen cited his reserve figures. Owen replied his estimate might be on the optimistic side, but wells in the area, which had been producing for some time, were still "going strong." He added he believed his estimate was reasonable.

Owen mentioned that one well in the Yates field has produced over 8,000,000 barrels and there did not seem to be any let-up in its production. Wells in the Yates field, he said, averaged over 440,000 barrels recovery, and the average of those in Eddy County and the Lea Pool of New Mexico was 500,000 barrels.

Owen summarized the regional geology and oil development of the West Texas Permian Basin. He covered the Amarillo Uplift, Central Basin, taking in Winkler, Pecos, Crane and Ector counties, the Hobbs field and others in Lea County and the east side of the Midland Basin, which catches Howard, Mitchell, Glasscock, Big Lake and a string of fields from Artiesia, Maljamar and Vacuum in New Mexico.

Permian Basin Cross Sections

By JAMES FITZGERALD, JR.,
Division Manager, Lands and Leases, Skelly Oil Company, Midland

These cross sections consisted of presentation of two papers by other authors. One was from Pecos County through Ector County, Texas, to Roosevelt County, New Mexico. The other was from Pecos County through Winkler County, Texas, to Roosevelt County. Abstracts of them follow:

South-North Cross Section From Pecos County Through Ector County, Texas, to Roosevelt County, New Mexico

By W. C. FRITZ,
Geologist, Skelly Oil Company, Midland

The section extending from Shell-Kirby No. 1 University in central Pecos County, Texas, to Franklin No. 1 Gephart in northern Roosevelt County, New Mexico, is carried generally along the eastern part of the Central Basin Platform. It traverses most of the Upper Castile basin of deposition and shows its northern limit. Through Crane, Ector and Andrews counties, the cross section is along the strike of the beds of the Whitehorse formation. It shows the progressively increasing depth of the porous and producing zones from the Whitehorse formation into the San Andres formation, although the only oil wells shown on the section are producing from the San Andres or older formations. Some idea of the magnitude of the unconformity at the base of the Permian is indicated in the first 10 wells in the section. The suspected relationship of the Glorieta (base of San Andres) with the undifferentiated Permian of the southern part of the Central Basin Platform is also shown.

South-North Cross Section From Pecos County Through Winkler County, Texas, to Roosevelt County, New Mexico

By E. HAZEN WOODS,
Geologist, Sinclair Prairie Oil Company, Midland

The section extends from Shell-Kirby No. 1 University in Pecos County to Sloan & Smith No. 1 Lovern in Roosevelt County, New Mexico. The first 18 wells along the western part of the Central Basin Platform show the generally accepted interpretation of reef production in the Whitehorse formation of Ward and Winkler counties, Texas, and southeastern Lea County, New Mexico. The section shows also the reef and the lagoonal facies of the Whitehorse and attendant production. North of the Vacuum pool of Lea County, the transition from predom-

inantly dolomitic deposition to the broken anhydrite, salt and sand facies of the Whitehorse and San Andres formations in Roosevelt County, New Mexico, is shown.

Geologic Section From Fischer County Through Andrews County, Texas, to Eddy County, New Mexico

By ROBERT I. DICKEY,
Geologist, Stanolind Oil & Gas Company, Midland

The geologic section presented herewith has been compiled from sample logs of the West Texas-New Mexico Permian Basin. It shows chiefly the continuity of the formations of the Whitehorse group from the east side to the west side of the basin. The gradation of sediments in the San Andres and Clear Fork from a shale and evaporite section on the east-side outcrop to an almost solid dolomite section in the subsurface in the basin is brought out by the large scale of the section and detailed character of the logs. In addition, the thicknesses of the formations and the depths to producing strata in the basin are shown.

Early Paleozoic Formations in Texas

By E. H. SELLARDS,
Geologist, Bureau of Economic Geology, Austin

The purpose of this paper is to summarize the available data derived from surface exposures and drilling records as to the extent of early Paleozoic seas in Texas. The first Paleozoic sea to invade Texas, so far as known, was that of Upper Cambrian time. This sea spread widely across central Texas, occupying a seaway extending from Oklahoma southwestward to El Paso. The Lower Ordovician sea occupied a similar seaway and may have extended somewhat more widely to the northwest. The Middle Ordovician sea covered at least the southern part of the Permian Basin and probably connected through the Llanoria Geosyncline with the Ouachita region of Oklahoma. The Upper Ordovician sea occupied the Llanoria Geosyncline and a large part of Trans-Pecos Texas. A Silurian sea is believed to have extended into northeast Texas, lying in the Llanoria Geosyncline. A Silurian sea likewise submerged the Diablo Plateau-El Paso region of Trans-Pecos Texas. Evidence is lacking to prove the connection of the two seas across Texas. A Devonian sea is believed to have extended across Texas, occupying the Llanoria Geosyncline.

Starting with an emergent condition at the beginning of Paleozoic time, the major changes of Paleozoic time in the Texas region are: submergence through Cambrian, with maximum submergence in Lower Ordovician; emergence through Middle and Upper Ordovician, with maximum emergence in Silurian; submergence in Devonian and Mississippian, with maximum submergence about Upper Pennsylvanian; emergence reaching maximum at close of Permian or in Triassic.

Geology of North Central and Central Texas

By M. G. CHENEY,
Consulting Geologist, Coleman, Texas

Cross sections and maps reveal the Concho Arch is an imposing northwest trending structural feature denuded in the Llano Uplift area. The similarity of this arch to the Central Kansas Uplift would be more obvious except for greater westward tilting of the Texas area. As in central Kansas, a comparatively thin Pennsylvanian section rests on truncated Ordovician and older beds along this broad axis. Uplift and erosion of the Ordovician evidently began during pre-Mississippian time. The Bend, and, to a greater degree, the Millsap Lake, Garner, and Mineral Wells beds show both pronounced thinning and some truncation over this broad regional feature.

Attention is also given to the evidence of progressive development of the Ouachita-Marathon Mountains, the Electra and Muenster arches, the Bend Flexure and other large structural features of this region.

Because of the possible economic importance of the arched Ordovician beds, the identification of subdivisions by insoluble residues and general character of well cuttings has been attempted with encouraging results.

To facilitate correlation of the Pennsylvanian and lower Permian strata, a classification by "subseries" as in the northern Mid-Continent and West Texas regions has been used in this paper. Such procedure places emphasis on unconformities and faunal changes of wide regional importance. Former group names are retained but boundaries redefined where needed.

The probable influence of the regional conditions in this area upon oil and gas migration and accumulation is discussed, such as the overlap of structurally high reservoirs by apparent source beds; differential pressures resulting from wedge-shaped overburden; progressive development of structural trends and local folds; and the character and distribution of sedimentary material, especially the development of local sandstone or limestone reservoirs and stratigraphic traps.

Sand Hills Area, Western Crane County, Texas

By E. H. POWERS,
Geologist, Gulf Oil Corporation, Midland

The Sand Hills area of western Crane County includes two pools, the Tubb and McKnight, in which production is obtained from Permian dolomite. In a third small area on the northwest side of the Tubb pool, 3 wells have encountered flush production of high gravity oil in the upper portion of the Lower Ordovician dolomite, and 2 small wells produce from a sandstone member of the Simpson, having failed in the Lower Ordovician.

Lower Permian dolomite lies unconformably on the eroded surface of a seemingly complex structural system, which involves Lower and Middle Ordovician sediments. Intermediate beds of probably Upper Ordovician, Silurian, and Devonian ages, respectively, appear in a test which was drilled approximately 8 miles southeast of the Ordovician producing area.

Paleozoic Stratigraphy of the Franklin Mountains of West Texas

By L. A. NELSON,
Associate Professor of Geology, College of Mines and Metallurgy, El Paso

The Franklin Mountains are eroded block mountains typical of the basin and range structure of the southwestern United States. The west side is a steep dip slope developed principally on beds of limestone. The east side is a fault scarp.

The Paleozoic stratigraphic section, which aggregates from 5600 to 7000 feet in thickness, is as follows: Permian, Wolfcamp formation; Pennsylvanian, Magdalena formation; Mississippian, Helms formation; Devonian, Canutillo formation; Silurian, Fusselman limestone; Ordovician, Montoya and El Paso limestones; Cambrian, Bliss sandstone. The section is overlain by the Comanchean, and rests, in places, upon pre-Cambrian granite and at other places upon the Llanoria quartzite.

The exposed portion of the Magdalena formation consists primarily of thin-bedded, light gray to black limestone, and for convenience it is divided into the following three units: the La Tuna at the base, the Berino, and the Bishop's Cap at the top.

Comparatively few fossils have been reported from the nearby localities; hence it is difficult to use them to correlate the Magdalena of the Franklin Mountains with formations in these areas. A few closely allied genera and species of gastropods and brachipods are reported from the Taos region of northern New Mexico and from the McCoy region and the Mosquito Range of Colorado. However, the most striking similarity is to a gastropod fauna described from the St. Louis outlier of Missouri and the equivalent St. David's limestone of Illinois.

The Permian is represented by about 650 feet of exposed sediments known as the Wolfcamp. These sediments occur as outliers some distance west of the Franklin Range and are separated from the exposed Magdalena sediments by alluvial deposits; hence the contact between the Magdalena and the Wolfcamp has not been seen.

Correlation of the Pennsylvanian Rocks of New Mexico

By C. E. NEEDHAM,
Associate Professor of Geology, School of Mines, Socorro, New Mexico

A typical section of Pennsylvanian rocks in central New Mexico is 1500 to 1800 feet thick. The lowest beds lie below the zone of *Triticites* and *Wedekindellina* and contain *Chaetetes milleporaceous, Spirifer rockymontanus, Spirifer occidentalis, Cleiothyridina orbicularis,* and *Mesolobus mesolobus.* These beds are considered to be younger than Bend, Morrow, or lower Pottsville, and are believed to correlate with the lower Cherokee, lower Atoka, upper Dornick Hills, lower Deese, lower Millsap Lake, lower Hartville, upper Pottsville, and lower Allegheny.

The zone above carries *Fusulina eurytenes, Wedekindellina euthysepta, Wedekindellina excentrica, Chaetetes milleporaceous, Cleiothyridina orbicularis, and Mesolobus mesolobus.* These beds correlate with the upper Cherokee, McCoy, upper Hermosa, middle Hartville, upper Millsap Lake, middle Haymond, upper Atoka, middle Deese, Boggy, Wetumka, Carbondale, and upper Allegheny. The equivalent of the Marmaton and Wewoka has not been recognized but is believed to be present.

The succeeding zone is the equivalent of the Kansas City and Lansing, upper Hartville, middle Canyon, middle Gaptank, middle Hoxbar, and lower Conemaugh. It is characterized by *Triticites nebraskensis, Echinoconchus semipunctatus,* and *Neospirifer latus.*

Next above is a zone containing numerous advanced species of *Triticites, Enteletes hemiplicatus, Marginifera hystricula,* and *Chonetes transversalis.* This zone is the equivalent of the lower Virgil, lower Cisco,

upper Gaptank, and Vamoosa. Finally, the highest Pennsylvania beds in New Mexico carry *Triticites ventricosus* and are probably the equivalent of at least a part of the Wabaunsee and the upper part of the lower Cisco.

The Upper Paleozoic of the Chinati Mountains, Presidio County, Texas

By JOHN W. SKINNER,
Geologist, Humble Oil & Refining Company, Midland

Previous work in the Chinati Mountains is briefly reviewed and the various exposures of Paleozoic sediments are described. The stratigraphy is discussed and evidence is presented demonstrating the presence of a Permian section nearly as complete as that of the Glass Mountains, as well as a fairly complete Pennsylvanian sequence.

Aerial Photography for Geological Exploration

By LOUIS V. OLSON,
Assistant Director, Agricultural Research Department, American Smelting & Refining Company, El Paso

The use of aerial photographs has gradually increased until at the present time no important surface geological work or any other surface exploration work, such as for power lines, canals, or pipe lines, is undertaken without the preliminary of an aerial survey. The sensitivity of the modern photographic materials is such that by the proper use of light filters slight color changes may be detected denoting changes of bedding planes which could not be detected by the eye. Stereoscopes have been developed that make it possible to detect even minor changes in elevation. Sketching of contour lines on the photograph tends to eliminate laborious ground survey work. Of course, the stereoscope also indicates the relative hardness of adjacent terrain, which is very important in tracing rock formation.

The Guadalupe Mountains as They Look to the Aerial Geologist

By CAREY P. BUTCHER,
Geologist, Tide Water Associated Oil Company, Midland

Stratigraphy in the Guadalupe Mountains is definitely related to contemporaneous structural movements. These relationships become obvious to the aerial observer. They become a part of his permanent record when they are photographed. Initial ground reconnaissance is advisable, and subsurface data should be given careful consideration. Such procedure has been followed in the Guadalupe area. Aerial observation is of great value even prior to surface or subsurface study. Thus time is saved, especially as the observer gains in experience. Hence these progressive aerial obliques of the Guadalupe Mountains are presented in the hope that they will be of value in better understanding subsequent papers and field trips. They culminate work begun in 1928. Views are east-northeast, and the progression is in a northwesterly direction. A simple cross section is added in further explanation.

Surface and Subsurface Formations, Eddy County, New Mexico

By RONALD K. De FORD,
Geologist, Argo Oil Corporation, Midland,
GEORGE D. RIGGS,
Consulting Geologist, and
NEIL H. WILLS,
Consulting Geologist, Carlsbad, N. M.

This is a preliminary report on incomplete surface and subsurface studies in Eddy County and adjacent areas. Results so far:

The Yates sand has been traced from subsurface into the surface outcrop, and the top of the Yates mapped from Carlsbad to McKittrick Canyon.

The subdivision of the Whitehorse-Capitan is simplified, making it more suitable for daily use by subsurface (and also field) geologists. From top downward it is subdivided into Carlsbad, Yates, Seven Rivers, Queen. This involves redefinition of the Carlsbad.

The gradation of Whitehorse into Capitan disposes of the untenable theory that the Whitehorse is Triassic. Yates sand passes beneath beds containing Permian (Guadalupian) fossils.

Even the youngest Carlsbad grades laterally into massive Capitan limestone, and all the Capitan limestone grades into the upper 800 feet of the Delaware Mountain sandstone. The Lower Castile formation is younger than the Capitan, which it overlaps.

In the vicinity of Carlsbad the Rustler rests directly on the Carlsbad limestone.

Evidence of the Pleistocene age of the Pierce Canyon beds is presented.

Relation of Permian Sedimentation to Tectonics in the Guadalupe Mountain Region

By PHILIP B. KING,
U. S. Geological Survey, Washington, D. C.

This paper is based on observations in the areas of Permian outcrop of northern Trans-Pecos Texas, and especially in the Guadalupe Mountains and the Sierra Diablo. The two regions are mutually supplementary in that the first exposes the higher Permian and the second the lower Permian and pre-Permian rocks.

The stratigraphy of the Permian series is complex, for it is characterized by great and abrupt changes in faunal and lithologic facies and in thickness of beds. The most striking features are limestone reefs, of which one of the largest is formed by the Capitan limestone. These are thicker and less clastic than adjacent contemporaneous deposits. Other less striking but no less significant changes are common, including lateral gradation of limestone into clastic rocks or evaporites, and of one variety of limestone into another.

These complex relations were produced by variations from place to place of physical-chemical and ecological environments at the inner end of an embayment of the sea. The variations resulted from many causes, the relative importance of which is not easy to evaluate. Some barriers, such as the reef masses, produced largely by sedimentation, restricted the inwash of clastic sediments and caused differences in depth and salinity on opposing sides. Similar effects have been caused by buried hills that are erosional relics of pre-Permian disturbances. The author believes, however, that some structural features arising on the sea floor during Permian sedimentation were also the direct cause of variations in environment and that they were an indirect cause of variations by their effect on the placing of the reefs and hills. The fundamental control of the complex Permian deposits thus appears to be tectonic.

Tectonic control has been imparted in a broad way by differences in subsidence in different areas and, on a smaller scale, by monoclinal flexures that were in movement during the time of Permian deposition.

Control by differential subsidence is illustrated by the relation of the Permian rocks of the Delaware Basin to those in adjacent areas. The northwest corner of the former basin extends into the now upraised mountain area, and was bordered on the west by an area that may be termed the Diablo Platform, a part of which forms the present Sierra Diablo. The platform has a substructure of deformed and deeply eroded pre-Permian Paleozoic and of pre-Paleozic rocks, but the basin may have been a region of little disturbance during pre-Permian time, for the few deep wells that have gone beneath the Permian in the basin show that it rests on little disturbed later Pennsylvanian rocks.

That the basin was a region of greater subsidence than the platform during early Permian time is suggested by the thinning of the Bone Spring and other early Permian formations from the basin toward the platform. In later Permian time, greater subsidence of the basin may have continued, but, if so, it was now complicated by other factors.

Theories of Reef Barriers

By E. RUSSELL LLOYD,
Consulting Geologist, Midland

Studies of the organic reefs of the Permian Basin and their relationships to rocks of contemporaneous age show a pronounced threefold facies, which the writer proposes to call the reef facies, the lagoonal facies and the "pontic" facies, the latter being a new name proposed for the facies group of which the Delaware Mountain formation, the black shales of the Black Shale Basin, the Bone Spring formation of the Delaware Basin and the type Leonard formation (not including the Hess facies) of the Glass Mountains are good examples. The reefs form natural barriers, separating the rocks of pontic facies from the sharply contrasted lagoonal facies which, in the Permian Basin, consist of dolomitic limestones grading laterally into anhydrite and rock salt.

By analogy, the reef barriers may serve as adequate explanation of the origin of all thick salt and anhydrite (or gypsum) deposits such as the New York salt and gypsum deposits, the thick salt deposits of western Colorado, the Stassfurt salt deposits of Germany, and many others. In each case we should expect a lateral gradation from the salt and gypsum (or anhydrite) into dolomitic limestone.

Likewise, reef barriers may be the explanation for such contrasts as the early Paleozoic Ouachita facies (pontic facies) of the Ouachita Mountains with the contemporaneous, dominantly limestone facies (lagoonal) of the Arbuckle Mountains. In like manner, the Ordovician Marathon facies (pontic) may be separated by a reef barrier from the contemporaneous foreland (lagoonal) facies.

Stratigraphy, Eastern Midland Basin, Texas

By JOHN EMERY ADAMS,
Geologist, Standard Oil Company of California, Midland

The thick series of Red-beds along the eastern edge of the southern Permian Basin is divided into groups and formations that can be recognized both

on the outcrops and in the subsurface. Gradations between near-shore, marine and restricted sea deposits are recognized and described, and unconformities in the section are traced out into the basin. The Triassic-Permian boundary line is redefined as occurring between the top of the newly defined Dewey Lake Red-beds and the base of the overlying Tecovas silts.

The Black Shale Basin of West Texas; A Preliminary Report

By TAYLOR COLE,
Geologist, University Lands, Midland

The Black Shale Basin of West Texas covers an area in excess of 21,000 square miles and includes the region from Terrell and Pecos counties eastward to Menard and Kimble counties. It extends from Real, Edwards and Val Verde northward beyond Glasscock and Upton counties. This basin includes such local basins as the Midland Basin, the Val Verde Basin of Frank E. Lewis, the Sheffield Channel, and the Kerr Basin.

Reasons are given for the belief that the black shale sediments in this basin were derived from rocks south of this area.

The shale ranges in age from Bend (lower Pennsylvanian) through Clear Fork (middle Permian). The shale of the Midland Basin has been divided into three distinct zones.

Pre-Cretaceous erosion has removed the overlapping Permian shale in the extreme southern portion of the area, leaving Pennsylvanian directly beneath the Trinity (basal Cretaceous).

The problem of stratigraphy is complicated by gradation and lack of diagnostic fossils with a short vertical range. There is a great divergence of opinion, derived from the study of well cuttings, as to correlative formational units.

Stratigraphy of the Upper and Middle Permian Basin of West Texas and Southeast New Mexico

By FRANK E. LEWIS,
Consulting Geologist, Midland

The stratigraphic phenomena of the Permian basin are related directly to gradation which may be classified as follows: (1) gradual gradation of clastics into marine beds basinward and (2) abrupt gradation of clastics and evaporites into reef limestone. Surface studies and subsurface work with stereograms and paleogeographic maps reveal that, as a result of this gradation, many of the various facies are time equivalents. A significant example of type (2) gradation is found in the Glass Mountains approximately 5 miles north of Iron Mountain. The clastics of the Word formation may be traced on the surface into the Vidrio limestone. Over a considerable area northeast of the Glass Mountains variable thicknesses of Vidrio limestone and underlying thick sandstones both grade into San Andres limestone over structurally high areas.

The appearance, subsequent movements and disappearance of a number of the structural features are placed in the Permian time scale. Recognized as major structures are the Val Verde Basin, the Cerf Basin and the Blackstone Arch. The latter extends northward from southeastern Pecos County across the Sheffield Channel and the Fort Stockton Arch into the Sand Hills Arch. The Central Basin Platform was built over this feature. A perspective of the Permian basin in its entirety indicates that the Anadarko Basin is an integral part of the larger basin to the south.

During the San Andres time sands moved into the Midland Basin by way of the Sheffield Channel which connected with the Delaware and Cerf basins. It appears that the sands moving into the Delaware Basin came from the west through Salt Flat, which is just west of the Delaware Mountains. Throughout all Permian time red clastics, which were derived from the northwest, northeast, and east, were deposited in the northern part of the basin, the dark sediments of southern origin forming in the south portion.

Monument Field, Lea County, New Mexico

By W. D. ANDERSON and
JAMES R. DAY,
Geologists, Amerada Petroleum Corporation, Midland

The Monument field is in east-central Lea County, southeastern New Mexico, and at the present time represents the northernmost producing area of the Hendrick-Jal-Cooper-Eunice trend of Winkler County, Texas, and Lea County, New Mexico. Regionally, the structure is closely related to this same trend, but is locally developed as a broad anticlinal fold in contrast to the rather narrow anticlinal ridges to the south. Production is from porous dolomitic limestone of middle Permian age and is found at an average depth of 3950 feet. A horizontal oil zone common to the field and approximately 150 feet in thickness is found between the subsea depths of minus 200 and a common water table of minus 350. Since the oil zone is horizontal and there is considerable structural relief, production is found through a stratigraphic range of several hundred feet. A definite relationship exists between structural position and productivity. Productive limits are defined off structure by the absence of porosity above the water table. Folding occurred at intervals during middle and upper Permian time, but the major movement was post-Rustler in age. Prior to July 1, 1938, a total of 473 wells, each on a 40-acre unit, had been drilled, and since the field was discovered early in 1935 it had produced under proration approximately 19,750,000 barrels of oil.

North Cowden Field, Ector County, Texas

By SAM C. GIESEY and
FRANK F. FULK,
Geologists, Stanolind Oil & Gas Company, Midland

Geographically, the north Cowden field is on the transition between the Llano Estacado to the north and the Edwards Plateau to the south. Geologically, it is on the eastern margin of

Labor Situation

American Federation of Labor's annual convention opens today . . . Humble employees seek revision.

A. F. of L. will meet in Houston

Approximately 300 delegates will act for more than 3,000,000 organized workers when the American Federation of Labor opens its fifty-eighth annual convention in Houston, October 3.

A number of prominent speakers have been invited to attend this convention, and it appears likely that Vice President John Garner will make a personal address. President Roosevelt, who also received an invitation, will be unable to attend but will transmit a message to the convention. The highlight of the convention will be the opening address of William Green, president of the A. F. of L. He will deliver his talk shortly before noon, Monday, and his address will be heard over a network of the National Broadcasting Company.

Humble employees ask for new contract

Employees of Humble Oil & Refining Company's Baytown refinery asked several changes in a proposed new working agreement laid before company officials in a bargaining parley at the Baytown community house early last week.

The federation is recognized by the company as the sole bargaining agency for the 3800 workers at the Baytown refinery. The company was represented by Stuart A. Giraud, vice president and chairman of the manufacturing committee, and Hines Baker, director and chief of the company's legal staff.

Conoco proposes pension plan

An extensive retirement pension program, which will affect more than 5000 employees, and will provide ultimate benefits of at least $30 a month, was announced last week by Dan Moran, president of Continental Oil Company, Ponca City, Oklahoma.

The retirement and pension fund has been established for all the company's men employees who reach the age of 65, and for women employees who reach the age of 60. The plan will be cooperative in character, employees making regular monthly contributions, which will be supplemented by contributions by the company. Minimum benefits will be $30 a month, and in the average case the total retirement income, including federal pensions, will amount to a figure somewhere between one-third and one-half of the employee's salary. For older employees, the company is providing a benefit in recognition of services rendered already.

the Central Basin Platform. The presence of a structure was indicated by subsurface data, and the discovery well was completed by the Southern Crude Oil Purchasing Company in September, 1930. The producing structure is an anticline 7½ miles long, with about 100 feet of closure indicated by present control. Oil is obtained from sands and limestone of lower Whitehorse age, and production is most prolific on the east, or basinward, flank of the structure—a condition due, at least in part, to the thickening of sands basinward from the crest. The first pay is reached at an average depth of 4027 feet, and the average amount of pay section penetrated is 89 feet. A gas cap exists in the first pay zone on the higher parts of the structure. Progressive folding during Whitehorse and Upper Castile time moved the axis of the structure basinward. Post-Rustler movement shifted it about 1¼ miles west to its present position. The present productive area of the field includes 9760 acres.

The Cowden anhydrite is defined in this paper.

Volcanics of the Buck Hill Quadrangle, Brewster County, Texas

By MORRIS A. ELMS,
Geologist, Phillips Drilling Company,
San Antonio

The volcanic rocks in the north and west parts of the Buck Hill quadrangle are a southeastern extension of the Davis Mountains of Trans-Pecos Texas. Field evidence suggests a division of the volcanics of this area into two regions: (1) west of Calamity Creek the volcanic series, consisting of flows of trachyte porphyry, andesite porphyry, basalt (five flows), and rhyolite porphyry separated by beds of ash, tuff, and breccia, has a combined thickness of 2100 feet; (2) east of Calamity Creek the rock series is distinctly different: here porphyritic olivine-free diabasic basalt flows (?) and intervening beds of ash and fresh water conglomerates predominate and are 552 feet thick.

A major stratigraphic break separates the volcanic rocks from the underlying upper Cretaceous rocks, and everywhere a basal conglomerate marks this unconformity. No difference in the dips of the underlying Cretaceous rocks and the volcanics is noticeable in the field, therefore the break at the base of the volcanics is considered one of disconformity rather than of angular unconformity. The age of these volcanic rocks is not known, but from available data it seems probable that they are of Cenozoic age.

A. I. M. E. San Antonio final program announced

The final program for the petroleum section meeting of the American Institute of Mining and Metallurgical Engineers, which is to be held in San Antonio, Texas, October 5, 6 and 7, has been announced as follows:

Wednesday, October 5

9:00 a.m.—Registration of all members and guests attending. Mezzanine Floor, Plaza Hotel.

10:00 a.m.—First Session. Ball Room, Plaza Hotel. George M. Cannon, Chairman; J. A. Barnes, Associate Chairman.

Properties of Oil Well Cement, by Eugene L. Davis, The Texas Company.

Characteristics Common to Various Types of Cements and How to Use These Cements for Best Results in Oil Field Work, by I. F. Bingham, Universal Atlas Cement Co.

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Market situation

[*Continued from page 57*]

priced generally in the Mid-Continent markets f.o.b. refineries at 2¾ to 3 cents a gallon, and sales were reported at those same prices f.o.b. Breckenridge, Texas.

Gasoline at Refineries

U. S. motor gasoline ranged in the Oklahoma market last week about as follows: 62 octane and below 3⅞ to 4⅞ cents a gallon; 63 to 66 octane, 4⅜ to 5⅛ cents; 67 to 69 octane, 4½ to 5⅜ cents; 70 to 72 octane, 4⅝ to 5⅝ cents.

Corresponding prices in the Chicago markets were 3¾ to 4⅜ cents, 4¼ to 4⅞ cents, 4⅜ to 5 cents and 4½ to 5¼ cents.

In East Texas the most common gasoline, 60-62, 400 end point, was priced generally at 4½ cents a gallon.

Kerosene prices f.o.b. Oklahoma refineries ranged from 4 to 4¼ cents a gallon for the 41-43 water white grade, and from 4¼ to 4⅝ cents for the 42-44 water white grade; and corresponding prices in the Chicago market were 3⅝ to 4¼ cents and 3⅝ to 4⅜ cents.

Fuel Oil

Fuel oil prices were not materially changed in the past week. In the Chicago market range oil was priced from 3⅝ to 4 cents a gallon. The No. 1 white oil was priced from 3⅝ to 3⅞ cents, and No. 1 straw from 3½ to 3¾ cents. No. 2 straw was 3⅜ to 3⅝ cents. No. 3 oil was 3¼ to 3½ cents. No. 5 oils were 60 to 70 cents a barrel. The No. 6 oil was quoted at 35 to 50 cents.

Figures show extension of favorable trends

The latest weekly statistics of the petroleum industry showed a continuation of the generally favorable trends of current operations and inventory changes.

Further reductions were made in stocks of both crude oil and gasoline, and fuel oil inventories were increased seasonally, as crude production and refinery runs continued at comparatively low levels.

United States crude output in the week ended September 24 averaged 3,251,150 barrels daily, about 12,000 barrels more than in the previous week, but about 200,000 barrels a day less than current market demand and 11.3 percent less than the output in the corresponding week last year.

Refinery Runs Down

Crude oil runs to refinery stills were brought down 25,000 barrels to an average of 3,220,000 barrels daily in the week of September 24, and they were 6.8 percent under the rate for the comparable week last year.

Crude oil stocks were reduced again to the extent of 1,500,000 barrels in the week ended September 17, latest period

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
September 25, 1937	3,666,300	*3,455,000	307,974,000	65,620,000	116,472,000
October 2	3,647,450	3,400,000	309,036,000	65,266,000	117,076,000
October 30	3,602,950	3,345,000	307,140,000	66,836,000	121,070,000
November 27	3,425,800	3,325,000	304,156,000	68,544,000	121,616,000
December 25	3,492,600	3,245,000	303,294,000	74,437,000	118,659,000
January 1, 1938	3,436,600	3,320,000	303,468,000	77,291,000	118,660,000
January 29	3,357,650	3,170,000	304,286,000	84,844,000	118,793,000
February 26	3,322,800	3,170,000	305,167,000	90,719,000	120,958,000
March 19	3,322,550	3,080,000	306,380,000	*93,192,000	122,067,000
March 26	3,405,600	3,080,000	307,557,000	92,858,000	122,979,000
April 30	3,396,150	3,215,000	307,147,000	91,339,000	128,270,000
May 28	3,098,650	3,150,000	301,583,000	87,946,000	134,315,000
June 25	3,083,900	3,025,000	293,463,000	82,412,000	137,801,000
July 30	3,316,400	3,240,000	288,514,000	76,864,000	144,294,000
August 6	3,317,850	3,215,000	287,406,000	75,380,000	144,699,000
August 13	3,359,900	3,295,000	286,251,000	74,387,000	146,261,000
August 20	3,392,700	3,265,000	285,137,000	72,709,000	147,180,000
August 27	3,388,500	3,255,000	285,029,000	71,754,000	146,926,000
September 3	3,349,100	3,195,000	284,919,000	70,514,000	147,646,000
September 10	3,206,900	3,235,000	282,457,000	70,860,000	149,104,000
September 17	3,239,050	3,245,000	280,945,000	69,244,000	149,388,000
September 24, 1938	3,251,150	3,220,000	.....	68,605,000	150,468,000
September 25, 1937	3,666,300	3,455,000	†307,974,000	65,620,000	116,472,000
Change in past year	—11.3%	—6.8%	—9.6%	+4.5%	+29.2%

* All time peak. † Stocks, September 18, 1938.

CRUDE OIL PRICE SCHEDULES

(Figures Revised to September 30, 1938)

MID-CONTINENT GRAVITY SCALE PRICES

(Posted January 28, 1937, except classifications above 40 gravity, which were made August 29, 1938, by Humble Oil & Refining Co.)
(Some fields of Mid-Continent have flat price postings, and are shown separately).

GRAVITY	Okla.-Kans.	[7]North La.-Ark.	Rodessa, La.-Tex.	North & W Central Tex.	East Central Tex.	Gray Co. Tex.	Carson Hutchinson Co. Tex.	[1]Conroe Tex. Type	West Tex.-N. Mex.	[2]Gulf Coast (Tex.-La.)	[3]Some La. Gulf Areas	[5]Jennings, La.	[4]Anahuac, Tex. Type	[5]Refugio, Tex. Type	[6]Mirando, Tex. Type
17–17.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	*$0.90	.....	.....	.....	.....
18–18.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.92	.....	.....	.....	.....
19–19.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.94	.....	.....	.....	.....
20–20.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	*$0.95	.96	.....	.....	*$1.01	*$0.96
21–21.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.98	.98	.....	.....	1.03	.98
22–22.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.01	1.01	.....	.....	1.05	1.00
23–23.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.04	1.04	.....	.....	1.07	1.02
24–24.9	*$0.98	*$0.90	*$0.93	*$0.88	.....	.....	.....	.....	.....	1.07	1.07	.....	.....	1.09	1.04
25–25.9	1.00	.92	.95	.90	.....	.....	.....	.....	*$0.78	1.10	1.10	.....	.....	1.11	1.06
26–26.9	1.02	.94	.97	.92	.....	.....	.....	.....	.80	1.13	1.13	.....	.....	1.13	1.08
27–27.9	1.04	.96	.99	.94	.....	.....	.....	.....	.82	1.15	1.15	.....	$1.10	1.15	1.10
28–28.9	1.06	.98	1.01	.96	*$1.03	.....	.....	*$1.20	.84	1.17	1.17	.....	1.12	1.17	1.12
29–29.9	1.08	1.00	1.03	.98	1.05	.....	.....	1.22	.86	1.19	1.19	.....	1.14	1.19	1.14
30–30.9	1.10	1.02	1.05	1.00	1.07	.....	.....	1.24	.88	1.21	1.21	.....	1.16	1.21	1.16
31–31.9	1.12	1.04	1.07	1.02	1.09	.....	.....	1.26	.90	1.23	1.23	*$1.00	1.18	1.23	1.18
32–32.9	1.14	1.06	1.09	1.04	1.11	.....	.....	1.28	.92	1.25	1.25	1.02	1.20	1.25	1.20
33–33.9	1.16	1.08	1.11	1.06	1.13	.....	.....	1.30	.94	1.27	1.27	1.04	1.22	1.27	1.22
34–34.9	1.18	1.10	1.13	1.08	1.15	*$0.96	*$0.91	1.32	.96	1.29	†1.29	1.06	1.24	1.29	1.24
35–35.9	1.20	1.12	1.15	1.10	1.17	.98	93	1.34	98	1.31	.....	1.08	1.26	1.31	1.26
36–36.9	1.22	1.14	1.17	1.12	1.19	1.00	.95	1.36	1.00	1.33	.....	1.10	1.28	1.33	1.28
37–37.9	1.24	1.16	1.19	1.14	1.21	1.02	.97	1.38	1.02	1.35	.....	1.12	1.30	1.35	1.30
38–38.9	1.26	1.18	1.21	1.16	1.23	1.04	.99	1.40	1.04	1.37	.....	1.14	1.32	1.37	1.32
39–39.9	1.28	1.20	1.23	1.18	1.25	1.06	1.01	1.42	1.06	1.39	.....	1.16	1.34	1.39	1.34
40 and above	1.30	1.22	1.25	1.20	1.27	1.08	1.03	1.44	1.08	1.41	.....	†1.18	[9]1.36	[9]1.41	1.36

* Minimum price and applies also to purchases of lower gravity.

† Maximum price and applies also to purchases of higher gravity.

[1] Conroe, Tomball, Satsuma, Raccoon Bend deep fields.

[2] Upper Texas Gulf Coast, including Goose Creek, Spindle Top, etc., and some fields of Louisiana Gulf Coast, including Black Bayou, White Castle, Vinton, Hackberry, etc., except that top price for those Louisiana fields is $1.29 for 34 gravity and above.

[3] Choctaw, Darrow, Lockport, Iowa (Magnolia posting), Cameron Meadows, etc.

[4] Anahuac, Dickinson, Gillock, Cedar Point, Fairbanks, Turtle Bay.

[5] Lower Texas Gulf Coast, nicluding Refugio, Saxet, etc. Posted 7-6-37.

[6] Duval, Jim Hogg, Webb and Zapata Counties; Heyser, Placedo fields. Posted 7-6-37.

[7] Prices are 7 cents lower in Buckner, Magnolia and Village fields, Arkansas.

[8] Posted September 23, 1938.

[9] Humble schedule of August 29, 1938, extends gravity scale up to top price of $1.61 for 50 gravity and above in Refugio district and to $1.56 in Mirando district.

Mid-Continent Flat Prices

	Flat Price	Date Posted
Arkansas:		
Smackover	$0.90	1–28–37
Louisiana:		
Garden Island	1.37	1–28–37
Lafitte	1.24	1–28–37
Texas:		
East Texas	1.25	8–29–38
Talco	.73	1–28–37
Livingston, Cleveland	1.27	1–28–37
Van	1.10	1–28–37
Pettus	1.42	8–29–38
Pecos County	.91	1–28–37
Pecos Shallow	.81	1–28–37
Luling	1.00	1–28–37
Lytton Springs	1.12	1–28–37
Salt Flat, Darst Creek, Hilbig, Carroll, Clark, Zoboroski	1.09	1–28–37
Flour Bluff	1.40	8–29–38
Seabreeze, Willow Slough, La Belle, Hardin	1.25	1–28–37

Michigan Prices

Midland	$1.12	1– 5–38
West Branch	.90	8– 9–38
Buckeye: Freeman-Redding	1.09½	1– 8–38
Arenac	.80	12–29–37
Muskegon	1.00	.....

Middle West Prices

Lima, Ohio	$1.00	11–20–37
Illinois	1.25	9–27–38
Centralia, Illinois	1.10 and 1.25	8– 8–38
Princeton, Indiana	1.25	9–27–38
Western Kentucky	1.20	9–27–38
Kentucky River, Eastern Kentucky	1.40	7– 1–38
Big Sandy River, Eastern Kentucky	1.32	7– 1–38

Rocky Mountain States Prices

	Flat Price	Date Posted
Colorado:		
Ft. Collins and Wellington. Light	$1.01	1–28–37
Ft. Collins and Wellington, Heavy	1.25	1–28–37
Cannon City and Florence	1.10	1–28–37
Iles, Light	1.18	1–28–37
Iles, Heavy	1.12	1–28–37
Montana:		
Cat Creek	1.30	1– 1–38
Cut Bank	1.35	6– 3–36
Pondera	1.05	9–29–33
Sunburst	.90	11–16–37
***New Mexico:**		
Hogback	1.33	1–28–37
Wyoming:		
Big Muddy	1.18	1–28–37
Elk Basin	1.05	7– 8–38
Frannie, Light	.65	5– 1–38
Frannie, Heavy	.62	11– 4–36
Graybull-Torchlight	1.30	1–28–37
Grass Creek, Light	1.05	7– 8–38
Grass Creek, Heavy	.50	5– 1–38
Hamilton Dome	.45	5– 1–38
Lance Creek	.97	1–28–37
Osage	1.30	1– 1–37
Rock Creek	1.20½	1–28–37
Salt Creek Tensleep	.70	1– 6–38

* Also see Mid-Continent Gravity-Scale Schedule above.

Pennsylvania Prices

Bradford-Allegheny	$1.68	9– 1–38
National Transit Lines	1.68	9– 1–38
Sw. Pa. Pipe Line	1.34	9– 1–38
Eureka Pipe Line	1.28	9– 1–38
Buckeye Pipe Line	1.18	9– 1–38
Corning Grade, Ohio	1.07	9– 2–38

Prices Outside United States

Canada:		
Petrolia	$2.10	9– 9–33
Oil Springs	2.17	9– 9–33
Mexico:		
F.O.B. Tampico, net; U. S. Currency, buyer pays tax	.85	Feb. 1938

Major Price Changes

	Penna. (Nat. Tr.)	Mid-Cont. (36 Gr.)	Calif. (26 Gr.)
June 19, 1933	Up 10	Up 19	.....
June 26, 1933	Up 10	.....	Up 9-12
July 6, 1933	Up 13	Up 10	.....
July 17, 1933	Up 15	.....	.....
July 28, 1933	Up 15	.....	.....
Aug. 11, 1933	Up 10	.....	.....
Aug. 24, 1933	.....	Up 10	.....
Aug. 30, 1933	Up 15	.....	.....
Sept. 6, 1933	Up 10	Up 10	Up 15
Sept. 8, 1933	.....	Up 15	.....
May 1, 1934	Up 10	.....	.....
Nov. 6, 1934	Cut 25	.....	.....
Dec. 6, 1934	Cut 25	.....	.....
Jan. 4, 1935	Up 15	.....	.....
Feb. 4, 1935	Up 15	.....	.....
May 16, 1935	Cut 15	.....	.....
June 26, 1935	Cut 15	.....	.....
July 16, 1935	Cut 10	.....	.....
Aug. 29, 1935	.....	.....	Cut *1
Sept. 6, 1935	Up 5	.....	.....
Oct. 29, 1935	Up 15	.....	.....
Nov. 1, 1935	.....	.....	Up *28
Nov. 18, 1935	Up 15	.....	.....
Dec. 6. 1935	.....	.....	Up *9
Jan. 9, 1936	.....	Up 10	.....
Jan. 13, 1936	Up 15	.....	.....
Feb 26, 1936	.....	.....	Up †5
Dec. 28, 1936	Up 12	.....	.....
Jan. 28, 1937	.....	Up 12	.....
Feb. 24, 1937	Up 10	.....	.....
June 7, 1937	Up 15	.....	.....
Sept. 1, 1937	Cut 22	.....	.....
Oct. 12, 1937	Cut 25	.....	.....
Dec. 1, 1937	Cut 15	.....	.....
March 7, 1938	Cut 17	.....	.....
June 13, 1938	Cut 25	.....	.....
Sept. 1, 1938	Cut 12	.....	.....

* Signal Hill 26 gravity.

† Seal Beach 26 gravity.

Crude Production Taxes

Oklahoma—Five percent of gross value less royalty interest.

Texas—2¾ cents or 2¾ percent, whichever is higher.

Louisiana—From four to 11 cents a barrel, depending upon gravity.

Arkansas — 2.6 percent of gross market values.

Montana—Two percent of gross value at well and 3/8 of 1c per barrel.

New Mexico—Severance tax of 2 percent on oil and gas.

Wyoming and New Mexico—Production tax based upon state and county assessments.

California—.66443 mills per barrel of oil produced and 17.39 cents an acre on proved lands.

for which official figures are available, and at the new level of 280,945,000 barrels were the lowest for 15 years and 9.6 percent smaller than one year previously.

Gasoline Stocks Down

Gasoline inventories were further reduced about 600,000 barrels in the week ended September 24, having declined to 68,605.000 barrels. They then were about 3,000,000 barrels or 4.5 percent larger than a year before, when stocks totaled 65,620,000 barrels.

Fuel oil inventories rose again about 1,000,000 barrels, to a new high mark of 150,468,000 barrels, where they were 29.2 percent higher than at the comparable time last year.

Shutdowns afford relief to unconnected wells

The five-day production week in Texas is helping to relieve the unconnected well situation in the East Texas field and at K-M-A.

In East Texas there are now probably less than 100 wells without market outlet, including leases connected to independent pipe lines that have lost their markets.

A recent survey of K-M-A indicated that possibly a score of wells awaited pipe line service.

Confiscated Texas oil hurts gasoline market

The gasoline market in East Texas has been impaired by the important dumping of confiscated crude on the market, at low prices.

Those sales have depressed the price structure on the state tendered gasoline made from the confiscated crude. Prices of this gasoline are quoted at 4 to 4⅜ cents a gallon, but some plants are selling from their docks to tank truckers at prices ranging down to 3¾ cents.

The East Texas field currently is credited with about 4000 barrels of hot oil movement daily to local refineries, but that amount probably includes confiscated oil, as the figures are arrived at from refinery runs after taking legal oil supply into consideration.

Kansas allowable put at 163,400 barrels

October daily allowable production for Kansas will be 163,400 barrels, identical with the estimate of demand by the United States Bureau of Mines. This

CALIFORNIA CRUDE OIL PRICES

(Posted February 26, 1936; except El Segundo and Wilmington, posted October 15, 1937, and Greeley and Canal posted July, 1938). All gravity above those quoted take highest prices of that field.

Gravity	El Segundo & Signal Hill	Seal Beach Alamitos Heights	Huntington Beach	Inglewood	Playa Del Rey	Olinda Brea Canyon	Athens Rosecrans	Torrance	Richfield	Whittier East Coyote La Habra	Montebello	West Coyote Hills	Santa Springs	New Hall McKittrick Kern River Round Mountain	Greeley, Canal	Mountain view	Midway-Sunset Buena Vista Hills Elk Hills	Lost Hills	Coalinga	Wheeler Ridge	Wilmington
14-14.9	$.80	$.79	$.78	$.79	$.80	$.76	....	$.80	$.76	$.76	$.77	$.78	....	$.70	....	....	$.70	$.70	$.70	....	$.75
15-15.9	.80	.79	.78	.79	.80	.76	....	.80	.76	.76	.77	.78	....	.70	....	....	.70	.70	.70	....	.75
16-16.9	.80	.79	.78	.79	.80	.76	....	.80	.76	.76	.77	.78	....	.70	....	....	.70	.70	.70	....	.75
17-17.9	.80	.79	.78	.81	.80	.76	....	.80	.76	.76	.77	.78	....	.70	....	....	.70	.70	.70	....	.77
18-18.9	.80	.79	.78	.84	.80	.78	....	.82	.76	.76	.77	.78	....	.70	....	....	.70	.70	.70	....	.79
19-19.9	.82	.79	.82	.87	.84	.81	....	.85	.76	.78	.77	.78	....	.70	....	$.70	.74	.74	.71	$.70	.82
20-20.9	.85	.79	.85	.90	.88	.84	....	.88	.78	.82	.77	.80	....	....	....	.70	.78	.78	.72	.70	.85
21-21.9	.88	.79	.89	.93	.93	.88	....	.91	.80	.85	.77	.84	$.78	....	....	.73	.82	.82	.74	.70	.88
22-22.9	.92	.82	.92	.96	.98	.92	....	.93	.84	.89	.79	.88	.78	....	....	.77	.87	.86	.78	.72	.92
23-23.9	.95	.86	.96	.99	1.02	.96	$.84	.96	.88	.93	.82	.92	.78	....	....	.80	.92	.90	.82	.76	.95
24-24.9	.99	.91	1.00	1.02	1.06	.99	.88	.99	.91	.96	.85	.96	.82	....	....	.84	.97	.94	.86	.79	.99
25-25.9	1.03	.95	1.03	1.05	1.11	1.03	.93	1.02	.95	...	.89	.99	.86	....	....	.88	1.01	.98	.90	.83	1.03
26-26.9	1.06	1.00	1.07	1.09	1.16	1.06	.98	1.05	.98	...	.92	1.03	.90	Elwood	....	.91	1.06	1.02	...	....	1.06
27-27.9	1.10	1.05	1.11	1.12	....	1.10	1.03	....	1.02	...	.96	1.06	.95	Ter-	$.91	.95	1.10	1.06	...	....	1.10
28-28.9	1.14	1.10	1.14	1.15	....	1.14	1.07	....	1.06	...	.99	1.10	.99	race	.94	.99	1.15	1.10	...	....	1.14
29-29.9	1.17	1.15	1.18	1.18	F.O.B.	1.17	1.12	....	1.09	...	1.03	1.14	1.03	....	.98	1.02	1.20	1.14	...	....	1.17
30-30.9	1.21	1.19	1.22	1.21	Pipe	1.21	1.17	....	....	...	1.07	1.17	1.08	F.O.B.	1.02	1.06	1.25	1.18	...	....	1.21
31-31.9	....	....	....	1.24	Line	1.24	1.22				1.11	1.21	1.12	Ship	1.06	1.09	1.29	....	...	....	....
32-32.9	....	....	....	1.27	....	1.27	1.27	Kettleman Hills			1.14	1.25	1.16	....	1.09	1.13	1.34	....	...	....	....
33-33.9	....	....	....	....	....	....	1.32	1.19			1.18	1.28	1.20	1.28	1.13	1.17	1.38	....	...	....	....
34-34.9	....	....	....	....	....	....	1.37	....	1.23	...	1.22	1.32	1.25	1.32	1.17	1.20	....	....	...	....	....
35-35.9	....	....	....	....	....	....	1.42	....	1.27	...	1.25	....	1.29	1.35	1.20	....	....	....	...	....	....
36-36.9	....	....	....	....	....	....	1.46	....	1.31	...	1.29	....	1.33	1.39	1.24	....	....	....	...	....	....
37-37.9	....	....	....	....	....	....	1.51	....	1.35	...	1.32	....	1.37	1.43	1.28	....	....	....	...	....	....
38-38.9	....	....	....	....	....	....	1.56	....	1.39	...	1.36	....	1.42	....	1.31	....	....	....	...	....	....
39-39.9	....	....	....	....	....	....	1.61	....	1.43	...	1.40	....	....	....	1.35	....	....	....	...	....	....
40-40.9	....	....	....	....	....	....	1.66	....	....	...	1.43	....	....	....	1.39	....	....	....	...	....	....
41-41.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.43	....	....	....	...	....	....
42-42.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.46	....	....	....	...	....	....
43-43.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.50	....	....	....	...	....	....
44-44.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.54	....	....	....	...	....	....
45-45.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.57	....	....	....	...	....	....
46-46.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.61	....	....	....	...	....	....
47-47.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.65	....	....	....	...	....	....
48-48.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.68	....	....	....	...	....	....

figure was decided on by the corporation commission despite nominations of purchasers indicating a demand for only 154,850 barrels daily.

Skelly Oil Company nominated 19,000 barrels daily as its requirement, a reduction of 4000 barrels. Cities Service Oil Company asked for 10,492 barrels, an increase from 8480 barrels. Bay Petroleum Company will buy 3440, an increase of 240 barrels. Barnsdall Oil Company nominated 1320 barrels against 1520 barrels. Derby Petroleum Company reduced its figure by 551 barrels to 5143 barrels daily. Kanotex Refining Company nominated 5000 barrels, a reduction of 1000 barrels. Shell Petroleum Corporation will take 9000 barrels daily, a drop of 425 barrels.

Louisiana October allowable hiked 210 barrels daily

The daily allowable for October in Louisiana was increased 210 barrels to 260,470 barrels, of which 67,000 barrels was for North Louisiana, a reduction of 3000 barrels in the Lisbon field, and 193,470 barrels for South Louisiana, a hike of 3210 barrels.

Lisbon field was cut 3000 barrels to 6000 barrels for October, based 75 percent on acreage and 25 percent on bottom-hole pressure.

The daily allowable at Rodessa remains at 35,000 barrels. The 25 Holloway sand (Travis Peak) oil wells at Cotton Valley were given a daily allowable for October of 6250 barrels, the same as for September.

Crude Production

Decrease of 9525 barrels daily brings U. S. total to 3,236,475 barrels; well under U. S. figure

OUTPUT of oil fields of the United States during the past week slightly declined, daily production having been 3,236,475 barrels. That was 9525 barrels daily less than in the previous week and 207,825 barrels below the market demand for domestic crude estimated by the Bureau of Mines for September.

The decrease in output, as compared with the previous week, resulted from smaller production in California, Louisiana and Kansas, which offset increases in Texas and Oklahoma.

California Down 15,000

California was down 15,500 barrels daily, having averaged 662,800 barrels a day. That was 24,500 barrels more than the federal allocation and 47,800 barrels more than the recommendation of the Central Committee of California Oil Producers.

Louisiana averaged 263,600 barrels daily, or 2900 barrels less than in the previous week. The daily production, however, was 8300 barrels above the Bureau of Mines recommendation and 3340 barrels above the state allowable.

Kansas showed a small decline, the daily production having averaged 159,375 barrels, which was 1750 barrels less than in the previous week, 8625 less than the estimated demand and 6125 barrels less than the allowable prescribed by the state.

Texas Output Up

Texas, as usual, showed a small fluctuation, having increased its daily production by 6800 barrels to 1,227,800. However, the daily output remained under the Bureau of Mines recommendation by 170,800 barrels and under the state allowable by 5448 barrels a day.

Oklahoma registered an increase of 4775 barrels, having averaged 454,050 barrels a day. That was 74,250 barrels less than the Bureau of Mines estimate but 26,050 barrels more than the state allowable.

United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in Sept.)	State Allowable in Sept.	BARRELS DAILY FOR WEEK ENDED Oct. 1	Sept. 24
TEXAS—				
Texas Panhandle	.....	.....	66,200	64,700
North Texas	.....	.....	71,300	71,800
West Central Texas	.....	.....	29,100	28,700
West Texas	.....	.....	189,200	188,900
East Central Texas	.....	.....	90,600	90,900
East Texas Field	.....	.....	370,600	370,200
South Texas	.....	.....	214,100	209,700
Texas Gulf Coast	.....	.....	196,700	196,100
Total Texas	1,398,600	1,233,248†	1,227,800	1,221,000
CALIFORNIA—				
Long Beach	.....	.....	56,000	56,700
Santa Fe Springs	.....	.....	30,200	32,600
Huntington Beach	.....	.....	30,200	30,500
Dominguez	.....	.....	25,200	25,200
Ventura Avenue	.....	.....	33,500	34,100
Midway-Sunset	.....	.....	63,400	62,500
Kettleman Hills	.....	.....	63,400	61,700
Wilmington	.....	.....	93,400	93,500
Others	.....	.....	267,500	281,500
Total California	638,300	615,000*	662,800	678,300
OKLAHOMA—				
Oklahoma City	.....	.....	95,175	92,125
Seminole Area	.....	.....	101,800	103,720
Fitts	.....	.....	37,725	36,975
Others	.....	.....	220,350	216,455
Total Oklahoma	528,300	428,000	455,050	449,275
LOUISIANA—				
North Louisiana	.....	.....	73,700	75,900
South Louisiana	.....	.....	189,900	190,600
Total Louisiana	255,300	260,260	263,600	266,500

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in Sept.)	State Allowable in Sept.	BARRELS DAILY FOR WEEK ENDED Oct. 1	Sept. 24
KANSAS—				
Burrton-Haven	.....	.....	9,475	9,550
Russell County	.....	.....	22,775	22,625
Silica	.....	.....	10,975	12,300
Others	.....	.....	116,150	116,650
Total Kansas	168,000	165,500	159,375	161,125
NEW MEXICO	111,600	106,000	105,900	106,300
MICHIGAN	57,000	.....	53,600	52,800
ARKANSAS	53,700	.....	57,750	62,900
MOUNTAIN STATES—				
Wyoming	65,600	.....	60,200	59,800
Montana	14,000	.....	13,100	12,800
Colorado	4,600	.....	3,500	3,600
Total Mountain States	84,200	.....	76,800	76,200
EASTERN STATES—				
Pennsylvania Grade	.....	.....	79,100	78,200
Southern Illinois (New Pools)	.....	.....	52,450	51,700
Illinois-Indiana (Old Pools)	.....	.....	16,100	15,900
Others, Eastern	.....	.....	27,150	26,200
Total Eastern States	149,300	.....	174,800	172,000
Total United States	3,444,300	.....	3,236,475	3,246,400

† Daily average, considering Saturday and Sunday shut-downs.

* Recommendation of Central Committee of California Oil Producers.

WEEK'S DRILLING HIGHLIGHTS

East Texas

Today 8 years ago, Dad Joiner's discovery well in East Texas was definitely an oil producer. Since then more than 26,000 wells have been drilled, of which 25,700 are now oil wells scattered over 133,500 acres, giving it all the records in oil except depth. Total production is in dispute because of cheaters, but every estimate puts it well over a billion one hundred million. It has had a full share of regulation, from martial law to special federal legislation, and the current rule of slow flow and two-days a week shut in is proving of benefit in retaining pressure and retarding salt water.

West Texas

Revival of the lagging search for Ordovician production is to follow blocking of long-term leases throughout a wide area. First off is an announced test in northern Pecos County in an area deemed most promising for this formation in the lower end of the Permian Basin.

South Texas

Preparations are being made to complete an Austin Chalk discovery well at 4800 feet in Frio County. A mile from Ezell field in McMullen County, a wildcat made 400 barrels daily from a 1500-foot sand. In the same county Campana field got a new producing horizon, a Government Wells sand well doing 50 barrels of oil and considerable gas from 2519 feet. The third gas and distillate sand below 8800 feet was proved in a Mercedes field test. In Starr County, La Reforma field was extended 1800 feet southwest with a second producer and a wildcat indicates a possible new 1600-foot field. Alice field in Jim Wells County recorded a Vicksburg sand lens a mile east of production and a south outpost completing in the same formation. La Rosa field of Refugio County got a minor extension, and Turkey Creek field, Nueces County, recorded a new sand at 4000 feet. An outpost of Keeran field, Victoria County, made a good well in a new 7000-foot sand.

North Texas

K-M-A is less active since the five-day week, but the idle rigs are not being moved away—they will be there handy when time for a revival arrives. There is plenty of territory yet to develop in the field which extends into three counties.

South Louisiana

Lake Long, Lafourche Parish, got a new oil sand at 10,236 feet, a quarter mile south of production. A new oil sand at 11,924 feet is being tested at Raceland field in the same parish, and so is one at 5340 feet in Timbalier Bay field. Bayou Blue, Iberville Parish, chalked up a 360-barrel well from a new sand at 5209 feet. Venice field, Plaquemines Parish, completed a well in a new sand over 100 feet thick.

California

A lease on 52,316 acres in Fresno County, California, has been taken by Seaboard Oil Company. Tideland drilling under state lease is to start immediately at Huntington Beach.

Kentucky

A new pool in Henderson County, Kentucky, is developing after completion of a pumper in the Jett sand, 300 feet above the McClosky which had been the objective of the wildcat. A second test will be started to go to the McClosky in the hope that it will match production at Birk City.

Texas Gulf Coast

West of Cotton Lake in Chambers County casing is being set for a production test of various shows ranging from 6377 to 6423 feet. South Cotton Lake got a minor southwest extension. A test 2000 feet northeast of Fairbanks field, Harris County, oil showings will be given a chance to produce next week. Eureka field, same county, got a new sand at 8094 feet.

Comparison of Permits Granted for New Wells

STATE	Week Ending Oct. 1	Total this Mo.	Total this Year	Total this Date Last Year	1937 Year Total
Arkansas	5	23	188	190	240
California	31	132	940	1,190	1,584
Louisiana	15	81	965	974	1,227
Kansas	29	158	1,200	2,125	2,663
Michigan	44	155	691	747	958
Oklahoma	35	207	1,558	2,191	2,711
Texas	368	1,247	10,080	13,687	17,238
Total	527	2,003	15,622	21,104	26,621

Summary of Wells Completed in the United States Week Ending October 1, 1938

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total, 1938	Total this Date, 1937
Alabama	.....	.....	.....	.....	.....	2	1
Arkansas	5	5	.....	.....	5,902	171	88
California	22	21	.....	1	18,991	968	1,141
Colorado	.....	.....	.....	.....	.....	6	15
Florida	.....	.....	.....	.....	.....	.....	1
Georgia	.....	.....	.....	.....	.....	1	.....
Illinois	38	29	.....	9	7,736	1,076	193
Indiana	.....	.....	.....	.....	.....	96	90
Kansas	38	21	3	14	29,527	1,301	2,015
Kentucky	17	8	1	8	1,067	592	316
Louisiana	15	9	1	5	1,587	827	734
Michigan	21	8	3	10	3,765	693	721
Mississippi	.....	.....	.....	.....	.....	11	11
Montana	7	5	1	1	111	57	151
Nebraska	.....	.....	.....	.....	.....	1	.....
New Mexico	18	17	.....	1	7,113	409	541
New York	*9	8	1	.....	46	*511	*978
North Dakota	.....	.....	.....	.....	.....	1	.....
Ohio	23	5	13	5	132	734	1,142
Oklahoma	48	29	4	15	3,607	1,663	2,335
Pennsylvania	*35	30	3	2	66	*1,623	*2,304
Tennessee	.....	.....	.....	.....	.....	2	.....
Texas	225	177	6	42	178,947	9,733	11,569
Utah	.....	.....	.....	.....	.....	3	.....
West Virginia	14	4	9	1	35	528	700
Wyoming	1	1	.....	.....	450	80	80
Total this week	536	377	45	114	259,082	21,089	25,126
Total last week	577	376	35	166	236,210	.....	.....
Total this year	21,089	14,622	1,494	4,973	13,753,144	.....	.....

* Includes water-intake and pressure wells.

Oklahoma Fields

Completion of Garfield County wildcat to be this week.

Third Southeast Braman completion is in early prospect.

Tulsa.—Further testing of the Garfield County discovery well of Champlin Refining Company, Boehm 1, SW SW NE 4-24n-8w, will begin this week. Since September 23 it has been shut in at 6703 feet, 7 feet in the second Wilcox sand, where it cleaned itself and flowed at a rate to gain an estimate of between 300 and 500 barrels daily through casing.

The speed at which it cleaned itself when reports indicated only a stained core and small gas pressure stamps the well as a major oil strike. Field reports the afternoon of September 23 were to the effect that while pulling a core from the bottom of the hole the well made a head of gas with some oil and threw mud half way up the derrick. These reports were that the 3½-foot core recovery was slightly oil stained and had a salty taste. Before midnight, however, the well had cleaned itself and was flowing clean oil steadily. The next morning when scouts, lease and royalty dealers gathered to observe further testing, they found the crew removing the rotary rig, Christmas tree in place and the well pressure steady at 2275 pounds on the casing. Surface equipment was ordered from other leases of the company in the Oklahoma City field and was being installed last week. Before a final completion is made the hole likely will be equipped with tubing, as the casing string, set at 6638 feet, is 9⅝-inch.

The structure indicated by geological studies indicates possible productive area of four sections. Champlin Refining Company owns most of this. The area was mapped on the surface in 1925. Two years later it was core drilled and later it was shot. Despite the structure indicated no drilling was done. Leases were allowed to expire during the lull in field development four years ago and Champlin Refining Company reworked the area by geological studies and reassembled the block. Approaching expiration dates on some leases are credited with the decision to drill. Work began June 2 and the hole was carried to the first Wilcox sand before testing began. The first member was dry. A gas showing was found between 6680 and 6690 feet in what is classed as the Marshall zone.

When the well began heading upon removal of the core in the second Wilcox sand, it was accepted that the pressure was from the gas in the Marshall zone.

Both the headquarters and the refining plant of the Champlin Refining Company are at Enid, 15 miles southeast. Since the concern holds surrounding acreage a controlled drilling campaign seems in prospect. No other locations are scheduled until final completion of the discovery well.

Another wildcat in Northwest Oklahoma came into the limelight last week with recovery of a saturated core from the second Wilcox sand by Kerlyn Oil Company in Orphanage 1, SE SW NW 21-13n-3w, Oklahoma County, east of the Britton pool proper and north of the town of Britton. At the close of last week it was waiting on cement at 6702 feet in the second Wilcox sand. This well is a mile northwest of another recent wildcat strike of Olson Oil Company, Vaneck 1, SE SW NE 4-12n-13w, which is rated at 250 barrels daily in the second Wilcox at 6768 feet, top 6721 feet. This hole was plugged back from 6776 feet in order to shut off water. Low output plus difficulty in getting a completion have brought no further drilling since completion the middle of September.

Another Garfield County wildcat, Kitchen 1, C SE SE 17-22n-5w, drilling by Indian Territory Illuminating Oil Company, has penetrated both Wilcox zones without showing for production. Top of the first sand was at 6878 feet, top of the second at 6934 feet. A core between 6938 and 6940 feet was hard, dry white sand.

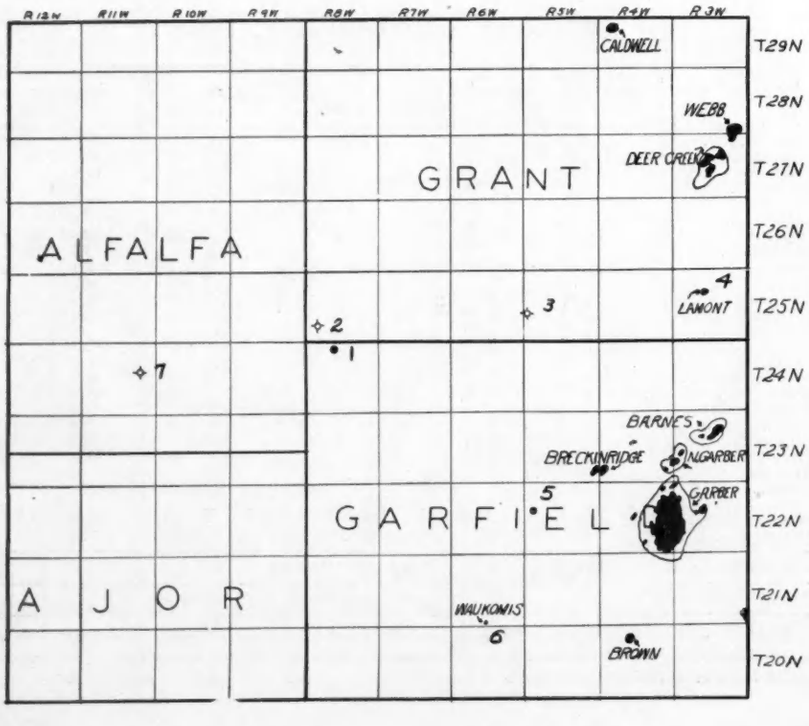
The third producing well for the Southeast Braman field was indicated last week when Ohio Oil Company and Helmerich & Payne, recovered a saturated core from the second Wilcox sand between 3620 and 3636 feet. This well is a south offset to the discovery well, drilled by the same concerns, School Land 1, NW NE NW 21-28n-1w, which was completed for 1100 barrels in second Wilcox sand. Location of the third well is NW NE NW 21-28n-1w, Wilbur 1. The second well for this pool was completed by Tide Water Associated Oil Company, School Land 1, SE SW SW 16-28n-1w, a west offset to the discovery. Holders of 1320 acres of leases in this development have asked for an order from the Oklahoma Corporation Commission to require 20-acre spacing. The case has been heard but no decision given.

Structure on which the Hillsdale discovery well was completed was first worked out in 1925 by C. G. Carlson, now a consulting geologist, then on the staff of Twin State Oil Company. This resulted in a leasing play which brought several thousand acres under prospective development, with Twin State Oil Company (Sun Oil Company) holding most of the acreage.

The structure had a northwest-southeast axis, a fact that did not check with expectations since most students of the area insisted that local folding would be slightly northeast by southwest in keeping with the trend of the Nemeha ridge, major regional high to the east. Two years later the area was core drilled and this further substantiated the northwest-southeast trend. Before releasing the acreage the area was shot and results from this were not conclusive. Efforts to get support for a test were unsuccessful, and leases were allowed to expire.

After this, Champlin Refining Company shot the area and began taking acreage with Section 4-24n-8w, the center of the block. This area was the high indicated by both the surface study and the core drilling.

The well was started in June, 1937, and drilled "straight down," as no coring was attempted until the Wilcox members of the Ordovician age were penetrated. The test had gas in what is thought to be the Marshall zone between 6680 and 6690 feet. Top of the second Wilcox sand was found at 6695 feet. This formation was cored to 6703 feet and the last 3½ feet were stained. Neither the gas pressure above nor the slight saturation in the core justified performance that followed. Gas pressure was sufficient to blow mud into the derrick while the core was being removed. Later in afternoon the well was opened again and made another head. It continued to increase in both gas and oil as it was intermittently opened during the afternoon. By nightfall it had cleaned itself and flow through casing was estimated between



35 and 50 barrels an hour. Christmas tree was installed and next day the rig was removed from the derrick.

Nearest test to the discovery well is a dry hole which made several heads while casing was being pulled in October, 1935. Helmerich & Payne, Inc., drilled this test (No. 2 on the map), Crouse 1, C NE SW 29-25n-8w. It had top of second Wilcox at 6648 feet and penetrated it 36 feet. Cores were salty. While pulling casing, a small shot was discharged at 4445 feet to loosen casing. A head of oil followed the shot. The hole was filled with heavier mud, but 13 hours later it made another head of 20 barrels of oil. The oil was classed as coming from the Tinkawa series between 4510 and 4600 feet. Tests, however, failed to gain oil from this level and efforts to rework the hole were not successful. The possibility that the oil may have been from the Wilcox sand has brought the area between this dry hole and the Hillsdale producer back into the leasing play over the area.

A completion in 1938 is the dry hole (No. 3 on the map) by Magnolia Petroleum Company, Reynolds 1, NEc SE 19-25n-5w, which had top of the second Wilcox at 6132 feet and was abandoned at 6233 feet.

No. 4 on the map is the small Lamont field, where the first well was completed by Carter Oil Company, Crisman 1, C WL SW NW 16-25n-3w, for 242 barrels from second Wilcox sand between 5400 and 5410 feet, September 24, 1937. One other producing well and two dry holes have been drilled.

A Garfield County wildcat (No. 5 on the map) is being drilled by Indian Territory Illuminating Oil Company, Kitchin 1, C SE SE 17-22n-5w, now below 6800 feet.

Another recent second Wilcox sand strike of the area is No. 6 on the map, known as the Waukomis field, where H. R. Hollenbach and associates completed Clark 1, NWc 34-21n-6w, for 200 barrels initial from second Wilcox sand at 7298 to 7336 feet. Nearby tests have failed to get production.

West of the Hillsdale field is a dry hole (No. 7 on the map) drilled by Olson Oil Company and associates, C SE NE 14-24n-11w. It had top of the formation at 7259 feet and drilled to 7332 feet.

At the left side of the map are the fields which previously marked the northwest limit of production in Oklahoma. The Garber field, one of the oldest in the state, had its first development in 1912. It produces from several formations and has some output from the Wilcox sand. The smaller Deer Creek field to the north had its first production from the Layton sand in 1920 and oil from the Wilcox sand in 1927.

OKLAHOMA
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Carter County—		
Shell's Horton 23, nwc se 6-4s-3w..	23	1175
Creek County—		
Shibley's Campbell 5, sw nw nw 13-17n-7e	5	1946
Sinclair Prairie's Dacon 1, sec 16-17n-7e	*	2756
Central Commercial's Bruce 1-A, swc 15-17n-9e	165	2512
Morris et al's Noble 1, nwc 35-18n-8e	15	2585
Big Four's Young 2, nec nw 24-19n-7e	60	2662
Sinclair Prairie's Oats 8, c nl sw ne 14-19n-9e	20	1289
Comanche County—		
Rhodes' Green 1-A, c wl se sw 2-1n-13w	*	925
Hughes—		
Phillane's Morrison 1, se se sw 13-9n-10e	80	4214
Jackson County—		
Burnmah's Sumner 2, nw ne se 6-1s-19w	140	2552
Jefferson County—		
Palmer et al's Grayson 5, sw ne se sw 19-6s-5w	20	1523
Rips et al's Penniston 5, swc 16-7s-3w	*	860
LeFlore County—		
LeFlore, Orr 27, c nw ne 12-6n-22e	¶8.7	2155
Lincoln County—		
British American, Markwell 1, c e½ e½ ne 26-12n-4e	*	5512
Sinclair Prairie, Rigney 1, swc 3-13n-6e (owpb)	¶23	4018
Wilcox, DeLozier 9, dr nr ne 15-14n-6e	60	3018
Marshall County—		
Elm Oil, Pleman's 1, ne sw ne 8-5s-6e	*	2022
Muskogee County—		
Howard, Jefferson 2-A, nec sw 33-15n-15e	10	1400
Noble County—		
Shell, Guthrie 2, sec sw 31-21n-2w	1072	5451
Okfuskee County—		
Hicks, Lair 1, se nw se 26-10n-10e	*	3425
Grimes, Harjo 1, nw se se 26-11n-9e	20	1508
Oklahoma County—		
Olson, Vaneck 1, se sw ne 4-12n-3w	288	6768
Okmulgee County —		
Dodge, Herrod 13, ne se se 17-15n-14e	10	840
Vierson, Starr 16, nw nw se sw 30-15n-14e	*	1757
Rebold, Jefferson 1-A, ne se se sw 31-15n-14e	10	1683
Osage County—		
Huston, Osage 5, swc 28-23n-9e..	*	446
Sinclair Prairie, Osage 8, nw nw ne 26-24n-10e	20	1750
Sinclair Prairie, Osage 10, ne ne se 9-25n-6e	120	2780
Pottawatomie County—		
Northern States, Hamby 2, nw ne nw 14-7n-4e	100	3879
Smith, Latimer 1, nwc 2-7n-4e	60	3553
Magnolia, Denton 1, ne nw sw 22-7n-4e (ow pb) (otd 4214 ft)	20	4209
Burkley, School Land 2, nw ne ne 36-7n-4e	595	4272
Magnolia, Hilton 5, se nw nw 22-7n-4e (otd 3182)	40	3203
Westheimer et al, McBee 2, nw sw nw 23-7n-4e (otd 4323)	150	3200
Speers, Vinson 1, sw nw sw 29-8n-5e	*	4506
Pontotoc County —		
Simpson et al, Breco 2, ne sw sw 21-2n-6e	50	3369
Davis, King 1-A, nec se 32-5n-8e..	*	459
Seminole County—		
Boettecher, Morgan 1, se ne nw 8-5n-7e	*	lcn.
Southern, Van Meter 1, swc ne 7-7n-6e	*	lcn.
Rogers, Oaks 1, swc 16-7n-6e	*	4447
McBride, Haulsee 4, se sw sw 2-9n-7e	65	2667
Atlantic, Pipkin 1, ne sw nw 9-21n-7e	85	4666
Maradun, McDaniels 1, se sw sw 22-10n-7e	*	3661
Stephens County—		
Pace, Allen 20, se sw ne ne 3-2s-8w	50	2008
Tillman County—		
I. T. I. O., Dickey 3, sec nw 1-3s-19w	244	3122
Tulsa County—		
Moore, Fee 1, se sw ne 8-18n-14e..	¶.5	912
Martin, Davis 1, c sw se 12-18n-14e	¶1	814
Wagoner County—		
Cremin, McIntosh 1, c nw sw 17-16n-18e	*	1049

*Failures; †Junked; ¶Million cu. ft. gas.

Kansas Fields

Showings indicate opening of two new oil fields

Wichita.—Showings in two wildcat wells indicated new pools for Kansas last week. One in the older eastern part of the state where Pryor & Lockhart decided to install pumping equipment in Leitzke 1, NE SW NW 34-28-7e, Butler County, was making considerable water. The other in Rice County, a mile west of the Wenke pool and a mile south of the Seneca pool, had a saturated core from Arbuckle lime between 3290 and 3295 feet. It is being drilled by J. H. Tatlock, Burchart 1, SW NW 18-20-10w.

Extension wells for the new Cramm pool, Rice County, and the Ainsworth pool, Barton County, indicated by showing last week, were completed this week.

Results from drilling during the week saw 21 oil wells completed for total initial production of 29,527 barrels. At that total potential for the state as of September 20 showed the first drop in

KANSAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Barber—		
Barbara Oil Co., Thompson "B" 1, c sw se 16-33s-13w	¶35	4630
Barton—		
Phillips Pet. Co., McClannahan 5, nwc se 7-16s-13w	99	3379
Stanolind O&G Co., May Deal 2, 220 ft n cwl ne ne 35-16s-13w	232	3386
Shell Pet. Corp., Schneider "A" 3, nec se 12-16s-14w	3017	3348
Phillips Pet. Co., Kroutwurst 3, nwc sw 11-17s-11w	*	3390
Magnolia Pet. Co., Muller 4, nec 1-18s-11w	1883	3245
Stanolind O&G Co., Grant 1, c nw ne 5-20s-11w	*	3353
Butler—		
Tide Water Assoc., Stockli 1, nwc ne 28-23s-5e	*	2484
Cowley—		
Lloyd-Frost & Study, Wilson 5, sw se sw 33-31s-3e	5964	3326
Ellis—		
Cities Service et al's Rumsey 3, nw ne sw 23-11s-17w	1194	3373
Shell Pet. Corp., Rumsey 10, se sw ne nw 23-11s-17w	3222	3370
Ford—		
Sinclair Prairie Oil Co., Young 1, c s½ s½ ne 34-27s-21w	¶6	5025
Greenwood—		
McGinnis, Jobes-Smith 3, nw ne ne 10-24s-13e	15	1665
Katz, Christy 5, c s½ sw se 12-26s-9e (pb 2122 ft)	21	2124
Moffett, Life 1, ne se sw 13-26s-9e	*	470
Marion—		
Heilman & Harwood, Kaufman 1, nw c se 27-17s-4e	*	2465
McPherson—		
Dickey Oil Co., Matthews 1, ne nw sw 24-19s-3w	464	2986
Norton—		
Power Oil Co. & Olson, Noel 1, c e½ ne 12-4s-21w	*	3801
Rice—		
Continental Oil Co., Wood 5, se sw se 12-18s-8w	2461	3225
Shell Pet. Corp., Zajic 7, ne sw ne 13-18s-8w	2741	3218
Cities Service Oil Co., Temple 1, nec se 23-18s-8w	*	3296
Continental et al, Pickerill "A" 2, nw ne ne 24-18s-8w	2307	3214
Atlantic & Sinclair Prairie, Pulliam "B" 1, c n½ s½ ne 35-19s-8w	¶51	3277
Schneider et al, Fair 1, c ne¼ 28-21s-9w	*	3475
Rooks—		
Producers Oil Co., Ham 1, swc nw 25-7s-19w	*	1800
Dean, Westhusen 2, c e½ e½ ne 11-9s-17w	*	240
Rush—		
Aylward Prod. Co., Holl Estate 1, c ne sw 1-18s-16w	*	3560
Russell—		
Louck & Moncrief, Miller "B" 1, nw ne se 29-13s-14w	687	3312
Derby Oil Corp., Solback 13, swc nw 32-14s-14w	88	3165
Scott—		
Atlantic O&R Co., Pyle 3, c e½ sw 14-20s-33w	743	4634
Stafford—		
Magnolia Pet. Co., Gates 1, nec sw 34-21s-13w	*	3741
Magnolia Pet. Co., Fischer Heirs 1, nw ne sw 36-21s-13w (pb 3783 ft)	*	3877
Pure Oil Co., Krey 7, nw se se 14-24s-11w	2023	3812
Stanolind O&G Co., Ferris "A" 1, sec 15-24s-11w	362	3831
Stanolind et al, Volker 5, nw ne ne 23-24s-11w	1934	3832
Sumner—		
Haypenny, Evers 1, sec ne 27-31s-2e	*	2441
Woodson—		
Cities Service Oil Co., Bahr 6, c e½ ne nw 23-23s-13e	45	2184
B. & B. Oil Co., Corkery 4, nw nwc 29-25s-14e	25	1427

*Failures; †Junked; ¶Million cu. ft. gas.

many months when it went to 3,580,829 barrels, against 3,603,253 barrels for August 20.

Showing for a small pool in Butler County a mile west of the old Sensenbaugh pool came with decision by Pryor & Lockhart to put Leitzke 1, NE SW NW 24-28-7e on the pump after it penetrated Kansas City lime 20 feet, total depth 2760 feet. It looks like a pumper of 50 barrels daily along with substantial water.

An extension three locations to the east of the new Cramm pool came when Shell Petroleum Corporation got 3100 feet of oil in the hole from Arbuckle lime, total depth 3279 feet in Piehler 1, NWc 14-19-9w, Rice County. The well will be acid treated and put on the pump. It began showing for production last week.

EAST TEXAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
Humble, Scott 4 (18.41-ac)	6400	3771
Wooster 11 (61.33-ac)	4500	3746
Hunt Oil Co., Ashby 18-B (99-ac)	240	3654
Ashby 19-B (99-ac)	200	3615
Ohio, Moores 52 (200-ac)	1200	3709
Richards & Holloway, Ashby 1	*	3704
Sun, Selman 14 (67-ac)	5400	3700
Weaver-Crim Corp., Stone 12 (49.26-ac)	3500	3768
Kilgore Area—		
Adams et al, Presbyterian Church 5 (85/100-ac)	700	3560
Carroll et al, City of Kilgore 1, blk 155	750	3563
Cities Service, Lockhart 14 (75.11-ac)	7500	3611
Cooper et al, Compton 7 (1.43-ac)	900	3532
Gulf, Muckelroy 31 (152.05-ac)	8800	3571
Lacy et al, Douglas 4 (3¼-ac)	3500	3545
Moore et al, Foltz 2, blk 117	850	3609
Potter Bros. et al, Crim 3, blk 121	1500	3570
Shell, Willoughby 23 (57.7-ac)	4200	3619
Longview Area—		
Bradley et al, Smith 11 (28½-ac)	5600	3647
Cushing Drlg. Co.-Joe Long, Owens 37-A (208-ac)	1800	3577
Gen'l American Oil Co., Clements (9-ac)	7800	3571
Gilcrease Oil Co., Tooke 5-A (23-ac)	10,000	3577
King et al, Doby 2 (5-ac)	5500	3706
Root & Rhodes Oil Co., Clements 3 (6¾-ac)	7500	3597
Shell, King 30 (160-ac)	9000	3692
Marion County (Jefferson)—		
Arkansas F. O. Co., Badgett 1, Urquhart sur	186	6050
Anderson County (Cayuga)—		
Phil-Top O&G Co., G. Perkins 1 (53.27-ac)	600	4089
Wynne Drlg. Co., J. D. Loper-Tidal 1 (80-ac)	*	4067
Anderson County (Long Lake)—		
Hunt Oil Co., Shaw-Cern 1	¶115	5350
Angelina County—		
J. C. Bonham et al, Cameron Lumber Co. 6	*	642
Franklin County (Talco)—		
Byrd & Frost, Inc., W. R. Evans 7 (315-ac)	88	4218
Houston County (Kittrell)—		
W. W. Hinchcliffe et al, Long Leaf Lumber Co. 1-A	*	2512
Houston County (Navarro Crossing)—		
Humble, Jas. A. Hill 1 (160.7-ac)	¶2.9	5978
Madison County		
Merritt Oil Co., Gustavis 1	†	4300
Franklin County (Talco)—		
Humble, Norman-Prince 5 (127.67-ac)	351	4286
Henderson County (Flag Lake)—		
Humble, J. J. Hearne 2 (208-ac)	275	3057
Titus County (Talco)—		
Humble, M. Galt 10 (80-ac)	95	4281
Kaufman County—		
W. G. Martin et al, Fee 2 (40-ac)	*	3549
Rockwall County—		
W. H. Carlin et al, N. F. Lofland 1 (55-ac)	*	2300

*Failures; †Junked; ¶Million cu. ft. gas.

East Texas Developments

Eight years old, big field has 25,700 producing oil wells. Production holidays reduces number wells making water.

Kilgore, Texas.—The East Texas field entered its ninth year as a source of high-gravity oil production on October 3. It is conceded to be the greatest known producing structure, having broken previous records for single fields on area, crude yield, total participating operators and total wells. Its influence upon the domestic oil market and for a period in international petroleum circles has been greater than any other field since the advent of the automobile.

Eight years of continuous development has given the field 25,700 oil wells in the Woodbine sand, with an average depth of 3650 feet per well. Abandoned producers due to depletion and mechanical difficulties boosts the total to above 26,000 wells. The field has 133,500 producing acres, and is completely defined. It has not been explored for production in the Lower Trinity, which has contributed high-pressure gas-distillate wells on adjacent structures on the east and west flanks.

Actual crude production from the East Texas field will never be accurately established, owing to violation of proration restrictions. Cumulative production to October 3, 1938, is estimated at 1,126,413,000 barrels by the Texas Railroad Commission, according to H. L. Williford, chief field engineer. Other sources place the total at 1,247,213,000 barrels and 1,272,711,000 barrels, using in each case a larger estimate on illicit production.

The original oil producer for the field, which embraces portions of five counties, was drilled by C. M. (Dad) Joiner et al on the Bradford farm, Rusk County, near the east edge of the structure. An oil producer was indicated when formation tester was used September 5, 1930, but the first commercial production was developed the following October 3 when 12 hours of bailing enabled the discovery to flow over the crown block. This well quit flowing several months later and was equipped for pumping. Ownership of the well and site was assigned July, 1931, to Hunt Oil Company, the present operator, and cumulating production is estimated at 81,850 barrels of oil. The discovery is currently pumping its base allowable of 20 barrels daily.

First formation water was found in the field on April 10, 1931, through completion of Magnolia Petroleum Company's Florey 1, situated on the west edge of Kilgore area, Gregg County. This original water well is currently pumping its base allowable of 20 barrels of oil daily along with 65 barrels of salt water. However, the hole has been plugged back and conditioned on several occasions.

Enforcement of production holidays in the East Texas field has reduced the number of wells accounted for as yielding water, and also has curtailed the normal expansion of pumping equipment needs, according to a mid-year survey conducted by the Texas Railroad Commission.

This quarterly check on the lifting and water status of the field credits a net gain of 306 pumpers and 42 air-gas lift wells, or an average of 116 additions per month. During this second quarter of 1938 the field gained 474 completions on the proration schedule. For the first quarter of the year the commission's check lists a gain of 249

East Texas Lifting and Water Status

	October, 1936	January, 1937	April, 1937	October, 1937	January, 1938	April, 1938	July, 1938
Flowing wells making water	942	1,071	1,005	1,047	978	1,004	886
Pumping wells making water	850	1,042	1,518	1,967	2,389	2,615	2,617
Pumping wells immune from water	1,619	1,860	2,145	2,350	2,521	2,544	2,848
Total pumping wells	2,469	2,902	3,663	4,317	4,910	5,159	5,465
Air and gas lift wells making water	63	71	72	123	97	121	149
Air and gas lift wells immune from water	222	243	286	307	351	343	357
Total air and gas lift wells	285	314	358	430	448	464	506
Wells producing Woodbine water	1,827	2,151	2,560	3,026	3,462	3,770	3,657
Wells producing water other sources	28	33	35	19	13	10	6
Total wells making water	1,855	2,184	2,595	3,137	3,475	3,780	3,663
Woodbine water production in barrels	42,718	46,250	53,314	75,241	85,120	91,830.56	103,128
Water production in barrels other sources	72	77	44	28	13	.60	8
Total daily water withdrawal in barrels	42,790	46,327	53,358	75,270	85,133	91,831.16	103,136
Average daily water production per well	23.07	21.42	20.56	24.72	24.49	24.29	28.16
Total completed wells	21,503	22,010	22,457	23,722	24,370	24,928	25,402
Daily allowable	437,172	447,778	456,800	480,708	491,852	502,248(1)	511,715(2)

[1] Sunday production holiday in effect. [2] Saturday and Sunday holiday from mid-May through June.

pumpers and 16 air-gas lift wells for an average of 88 per month, while adding 558 wells to the production schedule.

Concentration of drilling in the most favorable sections of the field within the past 6 months and rigid application of production holidays unquestionably has influenced the needs for lifting equipment and likewise retarded the expansion of the water table through the building up of the reservoir pressure. The field was placed on a 6-day production week effective January 23, 1938, after a trial test of 4 Sunday holidays in the previous November and December. Five-day production weeks were applied to the field May 14 and continued through June.

The field was credited with 5465 pumping wells and 506 lift units in service on July 1, representing 23½ percent of the 25,402 wells listed on the production schedule for that date. The previous quarterly survey credited 22.56 percent of the wells with using artificial lifts. A nominal shrinkage in the total wells within the above classification occurs each month due to depletion and abandonments. Between 400 and 500 wells that were pumped for a period have been plugged.

Fewer wells are credited with making salt water than the total for the previous quarter, but the average water yield per well increased from 24.29 barrels to 28.16 barrels daily. The new survey accounts for 3663 water wells, representing 14.42 percent of the field's total, for an estimated yield of 103,128 barrels daily. Private surveys conducted by operators estimate the actual water output at between 150,000 barrels and 200,000 barrels daily. An accurate check on the water situation is not possible in view of the fact some operators refuse to reveal the true status of their wells.

Imposition of production holidays has influenced the trend of the reservoir pressure, which is checked each month at 91 key wells by engineers of the Texas Railroad Commission. The average bottom-hole pressure recorded gains on the February, June and July readings, but dipped to the lowest level attained when losses, amounting to 3.81 pounds and 10.34 pounds were reported for August and September. The average for the field on September 8 was placed at 1111.3 pounds per square inch. Three surveys prior to the first introduction of short production weeks revealed pressure declines about equal to the September drop, but the downward trend was halted in November and December, followed by a sharp break in January.

Munson leasing

Notice of hearing on the Munson area in McMullen County has been issued by the Texas Railroad Commission.

The commission will determine whether special field rules should be written for the area. The hearing will be on October 11.

Tesoro hearing

The Texas Railroad Commission has issued a notice of hearing on the Tesoro field in Duval County, to be held in Austin on October 11 for the purpose of writing special field rules for the area.

The field formerly was known as the San Diego field.

West Texas Fields

Northern Pecos County area to have Ordovician lime test. Seminole field production is getting wide extension.

San Angelo, Texas.—An Ordovician lime test for the Masterson shallow oil pool, northern Pecos County, will be drilled by the Anderson-Prichard Oil Corporation, with the aid of acreage and cash contributions pledged by lease and fee owners. The Masterson area is rated as one of the best Ordovician prospects in the south portion of the Permian basin. It is situated on a southeast strike from deep production in the Sand Hills field, Crane County, and the Ordovician can be reached at a comparatively shallow depth as indicated by the high lime tops and oil and gas shows logged by a recent abandoned test midway between the Masterson and Sand Hills areas.

Anderson-Prichard Oil Corporation is reported to have obtained the deep mineral rights from Standard Oil Company of Texas on H&GN Sections 106, 108 and 110, Block 10, and an assignment from Iowa Realty Trust on an additional section. Substantial cash contributions have been •assured from other lease owners. A deep project for the area has been under consideration for a year.

Ordovician prospecting in the basin has been curtailed in recent months, but the large interests have been accumulating long-term leases in areas that are rated as promising for deep production. Northern Pecos County has been one of the most popular leasing spots, while the east and northeast flank of the basin have likewise experienced considerable leasing. Gulf Oil Corporation's Swenson 1, northeastern Garza County wildcat, is the most interesting Ordovician prospect underway, since it is far removed from previous deep tests. It is bottomed in lime at 7598 feet, and is reaming 9⅞-inch diameter hole to bottom.

Major extension for the Seminole pool, Gaines County, is considered assured by Atlantic Refining Company et al's Parker Bros. 1, C SE NE W. T. Section 264, Block G, which passed up good show of gas in Yates sand at 3315-35 feet, and is logging favorably on structure in drilling at 4505 feet. Location is 2½ miles northwest of the older producing area and 2 miles south by west of a recent important northwest extension. Magnolia Petroleum Company and Atlantic Refining Company, 50-50 owners on a number of full-section tracts in the area, have started rigging up on H. & J. Ranch 1, C SW SW Section 219, offsetting production. Development of the area has been retarded by the lack of pipe line or rail outlets.

Magnolia Petroleum Company's Lynn 1, C SE NE Section 770, which has been showing for a 1¾-mile northwest and northeast extension for the far flung Wasson field, Yoakum-Gaines County, earned a potential rating of 312 barrels of 32-gravity oil from lime at 5123-65 feet after nitro shot and 9000-gallon acid treatment. The next probable extension for the field is Honolulu Oil Corporation's R. M. Kendrick 1, SW NE SW Section 825, 1¾ miles east by north of the most easterly producer, now running pipe in big lime after logging top of brown lime at 4040 feet and first solid lime at 4510 feet. H. J. Brown et al's Wasson 1, SW SE NW PSL Section 51, Block AX, Gaines County, is a new operation situated one mile from production in the midsection of the field. It is on 80-acre tract farmed out by York-Harper et al.

Sam Yingling, H. K. Riddle et al's N. Barrier-Gulf 1, eastern Yoakum County wildcat, logged trace of oil stain in lime at 5240-60 feet, and was coring at 5325 feet. It is structurally low, having logged top of Yates at 3440 feet, with an elevation of 3564 feet. The Texas Company's Wright 1, Cochran County wildcat and 1½ miles west by north of Geo. P. Livermore et al's small oil and gas well, was plugged at 4939 feet, having failed to make an oil producer following nitro shot and acid treatment at 4910 feet. Top of brown lime was logged at 3670 feet and solid lime at 4000 feet, with an elevation of 3791 feet. Magnolia Petroleum Company's Wright 1, 1½ miles north by east of the original well, has standardized at 4712 feet to drill the big lime section, having logged top of brown lime at 3650 feet and solid lime at 3980 feet, with an elevation of 3784 feet.

The Cedar Lake geophysical prospect, northeastern Gaines County, remains a popular area, although failures have been drilled off structure to the east and west. The Texas Company is credited with having paid $22.50 per acre cash bonus for lease on SE Section 1, Block G, C. & M. Survey, and NE Section 2, Block H, D. & W. Survey. North central Dawson County is scheduled to have a 5250-foot project underway by the end of the year on a large block assembled by S. L. Guinn and associates. Location will be near the north line of T. & P. Block 35, T-6-N.

Competitive drilling for the Emma 4-well pool, southwestern Andrews County, will be accelerated through the Anderson-Prichard Oil Corporation having assumed a continuous development obligation in acquiring lease on an adjoining portion of Surveys 101 and 102, offsetting the three flowing completions, from the W. F. Cowden Estate. The latter retained 3/16 overriding royalty. The narrow "Z" shaped lease extends east from the NWc T. & P. Section 3, Block 44, T-2-N, and terminates

TEXAS PANHANDLE Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
L. R. Hagy-Harrington & Marsh, McIlroy 1	¶24	2885
Gray County—		
Cities Service Oil Co., Hughey 16-B	705	3288
Dyer et al, Benton 1	†	3295
Gulf, Saunders 10-A	391	3068
Lone Star Gas Co., Fowler 1	¶5	2827
Fowler 2	¶4.7	2589
Hutchinson County—		
Alma Oil Co., Whittenburg 4-D	524	3003
Kewanee Oil Co., Tom Lewis 37	256	3062
Stanolind, Terry 11	419	3012
Stekoll Oil Co., Whittenburg 5-C	109	2933
Texas Plains Oil Co., Watkins 7	592	3030
Wheeler County—		
Dunnaway Bros. et al, Worley 2	20	2329
Williams et al, Bentley 1	20	2366

•Failures; †Junked; ¶Million cu. ft. gas.

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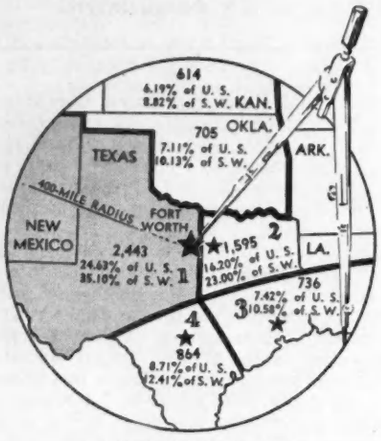
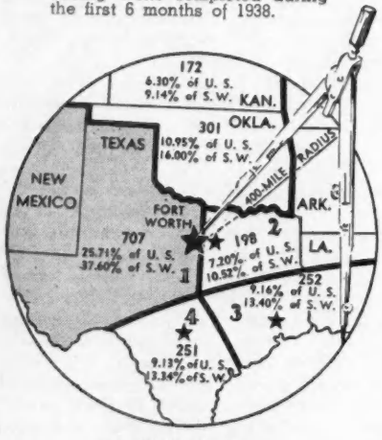


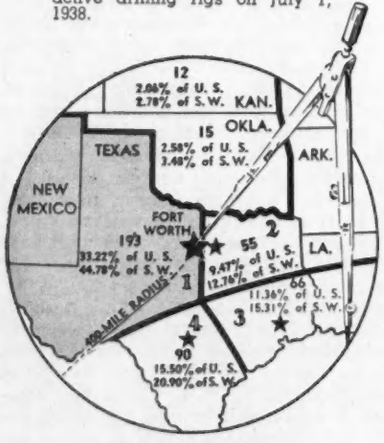
PRODUCING WELLS

This chart represents the figures and percentages of producing wells completed during the first 6 months of 1938.



DRILLING RIGS

Figures and percentages of active drilling rigs on July 1, 1938.



NEW LOCATIONS

This chart shows figures and percentages of new well locations as of July 1, 1938.

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at the SEc Section 43, Block 9, University Lands.

The south border of the Harper field, Ector County, is to become more active since John E. Mabee et al acquired from Paul Moss an undivided 5/8 interest in the N½ T&P Section 34, Block 44, T-2-S, offsetting production, for $25,000 cash and $75,000 payable from production. Purchasers also assumed obligations to carry on continuous development. The remaining interest is held by Argo Oil Corporation and York & Harper, Inc.

An unusually prolific well for the south portion of the Goldsmith field, Ector County, was developed by Phillips Petroleum Company and Pure Oil Company's Clyde Cowden 40, SWc SW Section 23, established a potential of 4942 barrels through 2-inch tubing after using 5000 gallons of acid at 4123-80 feet. A large yield was forecasted when the well flowed 1278 barrels natural in 8½ hours while running tubing. Gulf Oil Corporation's Goldsmith 124, west offset, is acidizing at 4188 feet.

J. R. Sharp et al's M. E. Crum-Sharp 1, SW SW NW PSL Section 7, Block B-2, northeast outpost for the Keystone field, Winkler County, is showing for a 100-barrel well after 110-quart nitro shot at 3290-3344 feet. Magnolia Petroleum Company's J. B. Walton 179, SE NW NW PSL Section 17, Block 77, east outpost for the north portion of the Kermit field, Winkler County, flowed 878 barrels initial through 1-inch choke after 110-quart nitro shot at 3200-59 feet.

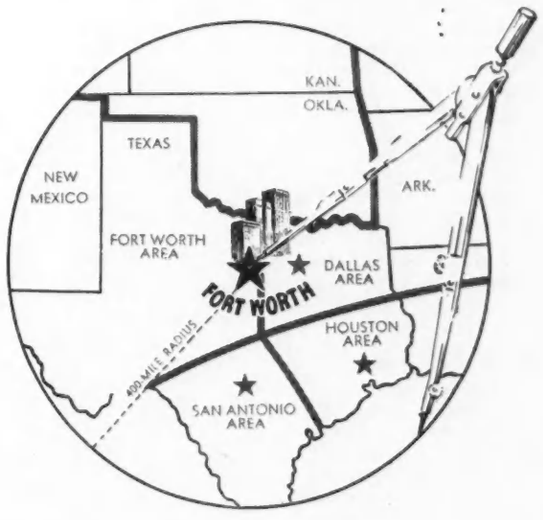
Aloco Oil Company et al's Tubb 1-a, near SWc PSL Section 20, Block B-32, southeast outpost for the Sand Hills field, Crane County, cored broken oil and gas pay at 4250-4419 feet, and halted at 4434 feet to land 7-inch pipe at 4293 feet for a production test. It has an elevation of 2550 feet. Humble Oil & Refining Company's Tubb 20, SWc PSL Section 18, Block B-32, offsetting production, failed to respond to treatment with 4000 gallons of acid at 4322-4434 feet, and is cleaning out after 200-quart nitro shot at 4330-4434 feet. It has an elevation of 2552 feet.

WEST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Andrews County (Emma)—		
Montecito Oil Corp. et al, Cowden-Sinclair 2	636	4221
Sinclair Prairie, Cowden 3	1272	4214
Cochran County (Wildcat)—		
Texas Co., Wright 1	*	4939
Crane County (Church & Fields)—		
Gulf, University-Lassiter 2-B	430	3142
Crane County (Gulf-Waddell)—		
Gulf, Henderson 14	1478	3540
Crane County (Jordan)—		
Snowden-McSweeney Co., University 5	2576	3549
Ector County (Foster)—		
Broderick & Calvert, Witcher 6	1853	4230
Hilton Oils, Witcher-I.T.I.O. 1	761	4165
Stanolind, Cowden 14-B	1333	4165
Witcher 6	433	4167
Ector County (Goldsmith)—		
Devonian Oil Co., Scharbauer 7-F	764	4188
Gulf, Goldsmith 121	668	4268
Continental, T. P. Land 1-C	130	4271
Landreth Prod. Corp., Scharbauer 2-O	1203	4197
Phillips-Pure, Cowden 37	875	4158
C. Cowden 39	1002	4185
T. P. Coal & Oil Co., Scharbauer 31	1435	4248
Ector County (Harper)—		
Oil Well Drl. Co., Cowden, Cowden 5-B	1011	4251
Wentz et al, Moss 7	2249	4117
Ector County (Jordan)—		
Oil Well Drl. Co., Connell 4-A	163	3545
Ector County (Moss)—		
Sinclair Prairie, Moss 2-B	90	4177
Ector County (North Cowden)—		
Stanolind, Cowden 72	868	4318
Fisher County (Wildcat)—		
Forest Dev. Corp., Morrow 1	*	4425
T. G. Shaw Oil Corp.-Texas Co., Stribling 1	*	4465
Gaines County (Wasson)—		
M. B. K. Drl. Co. et al, Wasson 2	1505	4990
Howard County—		
Magnolia, Hyman Chalk 7	1492	2955
Moore Bros. Corp., O'Daniel 4-A	847	2807
Pure, Chalk 17	517	3125
Jones County—		
Petroleum Prod. Co., McDuff 1	291	1913
Roberts & Choate, Williamson 1	312	1905
Pecos County (Masterson)—		
Childress Roy. Co., Shearer 1	337	1455
Street et al, Fromme 1	†	575
Pecos County (Netterville)—		
Superior Oil Corp., Potts 1	*	2566
Pecos County (Payton)—		
J. D. Kugle, Jr.-Sunset Oil Co., Eaton 1	80	2082
Sun, Payton 3	110	2031
Pecos County (Pecos Valley)—		
Kone Prod. Co., Pecos Valley Oil Co. 6	187	1638
Reagan County (Wildcats)—		
Culbertson & Irwin, Nunn 1	*	3457
Thomas Drl. Co.-Van Patton, Carr-Sun 1	*	2803
Schleicher County (Cooper)—		
Cooper, Morgan et al, Page 2	¶9½-20	5501
Upton County (Gulf-McElroy)—		
Gulf, McElroy 179	516	2974
Crier-McElroy 34	442	2919
Upton County (McCamey)—		
Web-Ray Oil Co., Cordova Union 3-C	225	2153
Ward County—		
Fitz-Patrick et al, Carr 1	*	5208
Gulf, Estes 104	1218	2660
Hutchings 112	325	2750
Magnolia, Sealy 9-46	367	2850
Mitchell et al, Johnson Bros. 1	327	2025
Western Well Service Corp., Johnson 3-E	731	2047
Winkler County (Kermit)—		
Magnolia, Walton 179	878	3259
Walton 180	1616	2911
Walton 183	1779	2915
Walton 184	1142	2921
Winkler County (Keystone)—		
Richardson Oils, Jenknis-Conoco 3	351	3387
Yoakum County (Bennett)—		
Mid-Continent, Bennett 7	1972	5232
Yoakum County (Wasson)—		
F. M. Allison Prod. Co., Edens 1	188	5044
Magnolia, Lynn 1	312	5165
Shell, Lowe 4	540	5062
Texas Co., Miller 1	385	5050

*Failures; †Junked; ¶Million cu. ft. gas.

LOANS—to produce and market Black Gold



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North Texas Developments

New oil horizon in South Vernon extension is promising. K-M-A is less active but rigs are standing by for revival.

Wichita Falls, Texas.—A new oil horizon for the northeast extension of the South Vernon field, Wilbarger County, appeared promising for commercial production through the efforts of Phillips Petroleum Company. This company's Mary Servatius 1, SEc H&TC Section 78, Block 14, offsetting shallower pays, filled 1300 feet with oil and 100 feet with drilling mud in 30 minutes when formation tester was used at 2623-38½ feet. Seven-inch pipe has been cemented at 2627 feet to try for a completion. It is 1¼ miles northeast of the original multiple-sand area uncovered in January, 1924, by South Vernon Oil Company, which later sold its holdings to Humble Oil & Refining Company for $1,100,000.

Fresno Oil Company's L. F. Ramming 1-A, Wichita County Ordovician project for the old Clara shallow pool, failed to encounter deep production, and was abandoned in hard Ellenberger lime at 2835 feet.

Seiboldt Drilling Company's R. A. Crawford 1, SWc TE&L Section 623, broadened the producing limits of the James field, Young County, half mile to the east with an initial gauge of 125 barrels of oil per hour following treatment of saturated section at 3950-67 feet with 8000 gallons of acid.

The Ellenberger horizon is to be tested by Sinclair Prairie Oil Company's Hood 1, NEc Section 18, ATNCL Survey, one mile west of the Panther deep area, Archer County, after failing to make a well in the Strawn section. Operations were temporarily halted the past week at 4783 feet to replace pulled-in derrick. The Texas Company's L. F. Wilson 34-A, SWc Section 29, first deep test by a major in the Panther field, has cemented surface pipe.

K-M-A Activity Down

Total operations in the K-M-A deep area, which now embraces a portion of 3 counties, have declined below the 100 mark for the first time since operators launched their ambitious drilling campaign last mid-November. Economic pressure exerted by the 5-day production weeks and limitations placed on crude runs by pipe line companies discourages unnecessary development. Operators have no choice but to mark time until more favorable conditions prevail. Sufficient acreage has been proved for production in the 3700-4000-foot Strawn horizon to enable the field to revive its drilling boom on short notice, as the numerous heavy-duty rotary rigs now idle are not being removed from the area.

K-M-A recorded 12 new operations the past week. The field has 32 tests in process of completion, or at the final casing point, and 21 additional tests are drilling between casing points. Surface pipe has been landed for 9 projects. Derricks and rigs account for 6 listings, and 2 tests are temporarily inactive. Locations have declined to 25 due to numerous abandonments.

E. J. Stump et al's T. B. Mitchie 1, L. Netherly Survey, A-240, is slated for abandonment after drilling to 4000 feet without logging sufficient saturation to make a producer. Top of lime was called at 3770 feet.

An estimated yield of 50 barrels daily on pump is expected to be made by Consolidated Oil Company et al's Ancell 1, near NW NE SW H&TC Section 36, Block 6, Wilbager County wildcat, after conditioning the hole. Production is from the Strawn, and the well affords a 4-mile northwest extension for the K-M-A. Broken sand and lime was logged at 4080-4127 feet. It failed to respond to 100-quart nitro shot at 4074-96 feet, and filled 1500 feet with 38-gravity oil and a little salt water after gun-perforating casing at 3904-22 feet and 3958-72 feet. However, this operation is believed to have loosened bridge formed by shot and allowed the column of fluid to rise from the lower pay.

Walnut Bend showings encourage more drilling

Wichita Falls, Texas.—Minor oil and gas shows encountered in the Ordovician section by Sinclair Praire Oil Company's Putman 1, second test for the Walnut Bend pool, northeastern Cooke County, are likely to result in additional deep prospecting in the area. Putman 1 has been rated as a failure, and shut down after plugging back from 6055 feet to 5300 feet. Top of the Simpson was called at 5209 feet, and first Ellenberger (Arbuckle) at 5450 feet. Sandy-lime at 5378-98 feet registered a trace of oil which tested dry, and slight show of oil and gas was reported at 5443-48 feet. Formation tester at 5399-5453 feet yielded salt water with trace of gas. Top of Simpson is 3087 feet higher structurally than the above company's McCall 2, 15 miles to the west in Cooke County.

Sinclair Prairie Oil Company is to start a third test in the Walnut Bend area, probably a direct offset to its Strawn oil discovery on the Best tract.

Mildred Oil Company's L. C. Netherly 1, one mile southwest of the discovery Strawn producer in the Collinsville pool, western Grayson County, pumped and flowed 259 barrels of 32-gravity oil initial. Production is from gun-perforations opposite the strawn at 3862-75 feet after plugging back from 4023 feet to 3897 feet. Jim McMurray et al's Long 1, located 2 miles southwest of the above producer, was drilling at 750 feet.

NORTH TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County (K-M-A)—		
Gem Oil Co., Ferguson 3, blk 16	1032	3867
H. A. Schaeffer Oil Co., Ferguson 4, blk 4	600	3870
Archer County (Panther)—		
Helmerich-Payne, Inc.-Blackwell O&G Co., Wilson 3, sec 25	1024	4381
Archer County—		
Nick Anagnos et al, Bridwell 13	92	952
Panhandle-Rancho et al, Prideaux 1	*	4755
Shappell Oil Co., Bell 13, sec 27	125	1026
Underwood Drl. Co. et al, Campbell 30-B, sec 1378	*	1012
Clay County—		
Hibbs et al, Ethridge 1, blk 69	*	305
Jo-Ellen Oil Co., Big Wichita River 3	90	1119
Big Wichita River 4	105	1117
Metzner & Burns, L. Thornberry 11-A, blk 6	*	350
Cooke County—		
Mudge Oil Co., Clayton 6	8	1100
Trubenbach et al, Richards 4-A	27	936
Texas Co., Trubenbach 11	87	816
Trumter Oil Co., Stacey 9	45	740
Grayson County (Collinsville)—		
Mildred Oil Co., Neatherly 1	259	4023
Haskell County—		
T. P. Coal & Oil Co., Livengood 1	*	3300
Jack County—		
Cohen et al, Bryson First Natl Bank 4	125	2366
Hunter, Johnson & Thorpe, Covington 5	5	395
Mar-Tex Oil Co., Kuykendall 1-D	450	3217
Sewell et al, Sewell 3, blk 3	*	345
Sullivan Oil Co., Swasey 5	8	381
Wichita County (K-M-A)—		
Bridwell Oil Co., Mangold 3, blk 34	960	3835
Browning et al, Lewis 2-A, blk 20	640	3826
Continental, S. Mitchell 2-B, lot 8	704	3869
Waggoner Bros. 2-B-A, sec 11	664	3774
Waggoner Bros. 2-B, sec 11	520	3900
Hanlon & Buchanan, Fassett-Tuttle 3-B	1296	4030
Humble, Pace 3	440	3878
Jones et al, Hodges 3	216	3904
Magnolia, Kempner 2-B, blk 19	492	3829
Omohundro et al, Pace 28, blk 44	664	3837
Shell-Phillips, Griffin 1	†	3765
Ven-Mex Oil Co., Big Wichita River 1-A	1280	3800
Wichita County (Jackson-Canyon)—		
King Oil Co. et al, Perkins-Cullum 1, blk 20	504	2636
Powers et al, D. E. Hooks 8-A	*	130
Wilbarger County—		
Phillips, Waggoner 207, sec 44	640	3062
Young County—		
Homestead O&G Co.-McLester, Stephens 1	50	3758
Pemeta Oil Co., Swain 10, sec 1465	10	711
West & Honea, Turner 2, sec 1495	*	881

*Failures; †Junked; ¶Million cu. ft. gas.

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Southwest Texas Fields

Four Corpus Christi areas have as many extensions. Agua Dulce deep test thrill fight shale below 11,000 feet. Rio Grande area has several new sands and extensions.

Corpus Christi.—Four Corpus Christi district counties shared in field extensions and new sand discoveries during the week. Several are looked upon as having a vital bearing on extensive drilling programs.

Barnsdall Oil Company was preparing to do further work on the Keeran Ranch, where its first wildcat, 4300 feet north and west of production, opened the area's first oil zone below 7000 feet. The test was drilled to 7010 feet in sidetracked hole, coring 30 feet of sand. The test was completed in the bottom 10 feet of the horizon, flowing 167.32 barrels of 38.9 gravity crude in 24 hours through 7/64-inch choke under pressures of 1360 pounds on tubing and 1470 pounds on casing. Gas/oil ratio was 860 to 1.

One location south of production in the LaRosa field, Refugio County, Geophysical Service, Inc., and Coronado Oil Company's Rooke 3 tested for a distillate producer in the discovery sand at 5564-84 feet, again at 5806-13 feet and at last reports was testing the 5900-foot pay.

William F. Morgan has developed an oil-producing zone just below 5400 feet on the Mitchell land southeast of the Refugio field. Mitchell 2-D, after drilling to 7150 feet, plugged back and perforated in a sand topped at 5430 feet. It gauged 135 barrels of oil per day through ⅛-inch choke with pressures of 590 pounds on tubing and 900 pounds on casing. Another test in the 5800-foot sand, completed several weeks ago as a distillate well in the 5800-foot sand, since has been converted into oil.

Carlos Oil Corporation's F. J. Smith 1, 2500 feet east of production in the Turkey Creek field, Nueces County, flowed 85 barrels of 23-gravity crude on a 12-hour gauge through 5/32-inch choke with pressures of 375 pounds on tubing and 550 pounds on casing. The well, located on the downthrown side of the fault dividing the Turkey Creek area from the Saxet field, opened a new zone through its completion in the upper 5 feet of sand 4070-80 feet. This places considerable heretofore condemned acreage into the line of play.

Southern Minerals Corporation's attempt to extend the Heterostegina sand in the Corpus Christi (Saxet Heights) field, failed when Southern Alkali Company 1, developed 720 feet of oil and salt water with 245 pounds working pressure in 20 minutes. The well cored gas sand 5077-80 feet and oil sand 5080-85 feet, but test from 5070-85 feet indicated the lack of producing qualities. It was drilling to lower sands.

Deep Hole Still Going

Union Producing Company's Brown 1, South Texas deepest test, was going ahead, still in heaving shale, at 11,230 feet. It is in the Agua Dulce area of Nueces County.

A new sand lens in the Vicksburg zone in the Alice area, Jim Wells County, is foreseen as Pan American Production Corporation et al test Dr. A. O. Cook 2, through perforations at 5300-5½ feet. The test is flowing some oil, wash water and mud with fairly large volume of gas through 5/32-inch choke with 975 pounds tubing and 2100 pounds casing pressure. The test is more than a mile east of the field's production in this zone and has several failures between it and the main area. It is ¼-mile southeast of Cook 1, a distillate well in the 5100-foot Frio sand.

Southeast of the Vicksburg production, Reese & Dunn's Stillwell 1, Block 61, encountered difficulties when attempting to complete through perforations at 5303-9 feet, and new sets were being made at 5304-12 feet.

Magnolia Petroleum Company is widening East Premont field, Jim Wells County, 1320 feet to the west, with Seeligson 10. The test is in sand at 6598-6602 feet, where casing was set.

Mercedes area test trying many new sands

Mission.—Opening of new producing sands in the Mercedes field, Hidalgo County, extension of the LaReforma area in Starr County, plus the discovery of a probable new oil field in the latter county further boosted increasing interest in the Rio Grande Valley.

Union Sulphur Company's American Rio Grande Land & Irrigation Company 11, deepest test ever drilled in the Mercedes area, plugged back from 9618 feet, perforating at 8990-9000 feet, where it showed for a gasser. It then was plugged back to 8880-85 feet, developing 3,850,000 cubic feet of gas per day with spray of oil through ¼-inch choke under 2750 pounds working pressure. Another set of perforations were made at 8840-45 feet, where the well gauged 5,900,000 cubic feet of gas and 24 barrels of 49-gravity oil per day through 3/8-inch choke with 1750 pounds tubing pressure. Another set of perforations were scheduled higher. Each production test was in a separate sand not producing in the area.

Hidalgo County's other important deep field operation is Phillips Petroleum Company's Flores 1, north of Samfordyce, which is below 8550 feet. Harvey & Henderson's Zaragoza Salinas 1, in the Sacatosa Grant, Starr County, was preparing for a production test of sand indicated at 1644-60 feet when electric formation tester was run. The well has been drilled to 1705½ feet and casing landed at 1700 feet. The test is 1750 feet east and 330 feet north of another test on the same tract drilled jointly by Stewart and Hagan and Harvey and Henderson, which also had showings.

Magnolia Petroleum Company's Fee Guerra 1, 1800 feet southwest of La-Reforma field's discovery, was waiting on gauge, but was estimated at 75 barrels of distillate and 9,000,000 cubic feet of gas per day, test being made through 7/32-inch choke under pressures of 1750 pounds on tubing and 2100 pounds on casing. It is bottomed at 5942 feet with casing landed at 5937 feet.

Goliad County test to go to Carrizo

Beeville.—Sun Oil Company was progressing close to 7400 feet in J. F. Shaper 1, Payne Survey, 5 miles southwest of Weesache in Goliad County. The test had topped the Mount Selman at 6377 feet and likely will be carried into the Carrizo before being abandoned, should no production be found shallower. It has become one of the most important wells ever drilled along the Pettus trend, as it gives definite information as to the thickness of various sections below the Yegua, usual contract depth of wildcats.

Several other tests in the area proved disappointing. J. P. Arnot's Steed 1, 2000 feet east of South Burnell, was abandoned below the 3650-foot Pettus zone. This Karnes County wildcat at first gave promise of extending production.

Pettus Oil & Refining Company's Ray 1, 6 miles southwest Voss field, Bee County, was going ahead after finding minor oil shows in the Government Wells sand, topped at 3234 feet. It was coring for Pettus below 4000 feet.

San Antonio.—Saltmount Oil Corporation entered the North Sweden field, Duval County, purchasing 10 producing wells and 166 acres from Dorna Brothers, Inc., and Frank J. Gravis. The deal is reported to have involved nearly $600,000, but some reports are that it is slightly higher.

The transaction included the discovery lease, which is owned in fee by F. Vallo Puig and is in the San Andres Grant. It is on the eastern side of the field and is productive in the 4700- and 4750-foot sands. The lease has a monthly output of approximately 19,500 barrels.

The cash consideration is currently reported to have been $400,000 with the oil payment totaling $177,280.

Frio County discovery completing in Austin

San Antonio.—Humble Oil & Refining Company was ready to complete C. C. Schley 1, Frio County's newest discovery. The well has been carried to 5309 feet, tested sulphur water in the Edwards limestone, and was plugged back to 4800 feet for completion in the Austin chalk.

The test is located in the northwestern portion of J. Travalder Survey No. 174, 2½ miles southwest of Shattel, on a block of 20,000 acres.

Records on the well are as follows: Elevation 516 feet, derrick floor; top Austin chalk, 4605 feet; base, 5035 feet;

top Eagleford 5035 feet; top Buda, 5057 feet; top Del Rio, 5117 feet; top Georgetown, 5211 feet; top Edwards limestone, 5300 feet. It had saturation at 4720-85 feet, where drill-stem test indicated a fairly large producer of 39-gravity crude.

Paul C. Teas had cored to 7110 feet and was waiting on orders in Grizzard 1, on the Smithville prospect in Bastrop County. The well topped Edwards limestone at 7039 feet and showed oil stains.

SOUTH TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
SAN ANTONIO DISTRICT		
Bexar County—		
F. Gilpin, Jr., Nieman 1, Montezsur	*	40
T. & C. Owen, Fest 4 (Von Ormy)	3	628
Roger Putnam, S. Wetz 13 (Von Ormy)	4	694
Caldwell County—		
Martell, Gray 2 (Salt Flats)	†	2645
Jim Smith 1 (3) (Salt Flats)	†	2626
R. R. Ogden, Lackey 4-A (West Dale)	65	2584
LAREDO DISTRICT		
Duval County—		
J. M. Anderson, M. B. Volpe 1, El Mesquite gr	*	3100
Arkansas Fuel, M. Rossi 11 (N. Sweden)	350	3920
Buchanan Prod. Co., Foster 6-B (Eagle Hill)	115	1525
Cox & Hamon et al, Cuellar 19 (Hoffman)	150	2851
Cuellar 41 (Hoffman)	339	2824
Hoffman, Fair 4 (Hoffman)	201	2163
Darby, Heintze 1 (Hoffman)	195	2676
Gulf Stream, Inc., Rodriguez 6-A (Seven Sisters)	*	2674
Magnolia, Duval 1 (267) sec 267	*	2968
Duval 10 (291) Casa Blanca	40	1191
Weil 13 (Hoffman)	216.22	2812
Weil 14 (Hoffman)	144	2805
Petroleum Producers, Inc., Society for Propogation of the Faith 1, sur 120	*	1350
Porter, Fitzsimmons 4-A (Fitzsimmons)	450	4385
Reynosa, F. G. Wilson 9 (N. Sweden)	400	4896
V. G. Schimmel, Foster 4 (Eagle Hill)	64	1528
Stewaret & Nye, Peters 2 (Rancho Solo)	75	1854
McMullen County—		
Mills Bennett, Nueces 2-C, sec 168	*	1350
Marion Prod. Co., Lark 6 (Callham)	15	1057
Webb County—		
L. H. Jones, Bruni 1, blk 54, Albercas gr	*	3363
Smith & Hamil, Benavides 10-A (Cole-O'Hern)	118	2903
Zapata County—		
Dulup Oil Co., Trevino 37 (Escobas)	122	1346
J. P. Nash, Haynes 33-A (Comitas)	50	1141
Transwestern, Trevino 19-B (Escobas)	*	1382
CORPUS CHRISTI DISTRICT		
Aransas County—		
W. J. Collins, B. Wilkinson 2 (McCampbell)	*	7150
Hidalgo County—		
Fohs, Guerra 1-B (Samfordyce)	350	2880
A. I. Graboski, Guerra 2-B (Samfordyce)	350	2872
Jim Wells County —		
Auld & Pitkin & Goldston, Lindsay & Reed 1 (Alice)	*	5505
Buchanan & Blanco, Rattan 2 (Alice)	600	5305
Humble, True 1, Garza Grant	*	5370
Live Oak County—		
J. H. Turner, Federal Land Bank 1, Turner sur	*	893
Nueces County—		
Carlos Oil Co., Smith 1 (Turkey Creek) (perf 4070-75)	500	7511
Heep & Refugio, M. Fogers 1 (S. Clara Driscoll)	500	5460
Renwar, Harrington 15 (Turkey Creek)	300	3865
Seaboard of Delaware, Chapman 7 (Chapman Ranch)	*	6960
Refugio County—		
Hewitt & Dougherty, Lambert 79 (Tomoconnor)	1350	5916
Quintana, O'Connor 72-A (Tomoconnor)	2500	5925
Victoria County—		
Barnsdall, Keeran 1 (Keeran)	600	7510
Gulf, Traylor 8-B (Heyser)	450	5497
Seaport, Diemer 5 (Heyser)	650	6118

*Failures; †Junked; ¶Million cu. ft. gas.

Mirando district wildcats at interesting stages

Laredo.—Several scattered Mirando district wildcats were at interesting stages late last week, one of which was reported to be logging formations sufficiently high to promise the opening of a new pool.

Joe W. Cosner et al's H. Garcia 1, Section 409, AB&M Survey, 4 miles east and slightly south of the Fitzsimmons production, was coring near 4650 feet for the Pettus sand. The well, which has an elevation of 416 feet, topped Jackson at 3601 feet, Hockleyensis at 3908 feet, and showed fair saturation in a sand stringer at 4102-2½ feet. Other sands at 4166-77 feet and 4194-4226 feet developed salt water.

R. A. Thompson's E. A. Parr 1, about 2½ miles south of the Fitzsimmons area and northeast of Thomas-Lockhart production, was in the Jackson zone below 3500 feet, no details being reported.

Hiawatha Oil & Gas Company's Southland Life Insurance Company 11, 3000 feet north of the west extension to Sweden area, Duval County, was coring below 6295 feet, having logged several sands, none of which had odor, below 6000 feet.

In McMullen County, Harry Ezzell's Fee 22, 1 mile southwest of the field, was preparing to pump, rated at 400 barrels of clean oil per day. Completion was being effected through perforations in sand at 1506-19 feet.

California allowable is not changed

California's crude allowable for October remains unchanged. The Central Committee of California Oil Producers headed by Lawrence Van der Leck, chairman, unanimously voted to give the producers of the State an October daily quota of 610,000 barrels, and a 5000-barrel daily additional tolerance to care for new wells. This is the same figure voted and passed upon during the past three months.

Governors conference studies oil conservation

Preliminary to the quarterly meeting of the Interstate Oil Compact Commission in Tulsa, September 29, the National Conference of Governors moved into Tulsa September 27 to wind up its meeting which started the day previous in Oklahoma City.

It was conservation and oil conservation in particular that held the spotlight for the Tulsa session. Governor Henry A. Horner of Illinois and Walter A. Huxman, governor of Kansas, came to the Tulsa part of the conference and did not get to Oklahoma City.

The Illinois governor brought a pledge to the oil industry rather than to the conference to the effect that his state will have conservation laws after the next session of its legislature. His program calls for laws to provide for well spacing, equitable tax legislation, cooperation between the state and the national government, and fairness in dealings between the state and the industry.

For Kansas the plea of its governor is still a change in the statute under which the Interstate Oil Compact Commission exists by which the national government will have authority to allocate allowable between states. None of this came before the conference of governors. It came before the compact meeting.

A. I. M. E. program

[*Continued from page 65*]

Sulphating-resisting Cements, by Cedric Wilson and Svend Rordam, Trinity Portland Cement Co.

Squeezing Cement Against Permeable Formations, by C. P. Parsons, Halliburton Oil Well Cementing Co.

2:00 p.m.—Second Session, Ball Room, Plaza Hotel. F. B. Plummer, Chairman; W. E. Winn, Associate Chairman.

The Surface Chemistry of Clays and Shales, by Allen D. Garrison, The Rice Institute.

The Viscosity Characteristics of Clays, by G. Broughton and R. S. Hand, Massachusetts Institute of Technology.

Surface and Interfacial Tensions of Oil-water Systems in Texas Oil Sands, by H. K. Livingston, Shell Research Fellow, The University of Texas.

The Interfacial Tension Between Reservoir Oil and Water, by Claude R. Hocott, Humble Oil and Refining Co.

Flow of Oil-water Mixtures Through Unconsolidated Sands, by M. C. Leverett, Massachusetts Institute of Technology.

Influence of Oil Flow on Water Content of Sands, by Nico van Wingen, University of California.

Thursday, October 6

9:00 a.m.—Third Session, Ball Room, Plaza Hotel. Paul Weaver, Chairman; R. L. Huntington, Associate Chairman.

An Apparatus for the Determination of Porosity by the Gas Expansion Method, by Albert B. Stevens, Agricultural and Mechanical College of Texas.

A Method for Determining the Water Content of Sands, by H. G. Botset, Gulf Research and Development Co. (T.P. 972; Petrol. Tech., Aug.).

Core Analysis and Interpretation, by Howard Pyle and John Sherborne, Union Oil Company of California.

The Effect of Pressure Reduction on Core Saturation, by H. G. Botset and Morris Muskat, Gulf Research and Development Co.

Some Applications of Core Analyses in Oil Field Development, by William A. Horner and James A. Lewis, Core Laboratories, Inc.

1:30 p.m.—Fourth Session, Ball Room, Plaza Hotel. E. A. Stephenson, Chairman; C. E. Reistle, Jr., Associate Chairman.

Physical Properties of Hydrocarbons and Their Mixtures, by E. R. Gilliland, R. V. Lukes and H. W. Scheeline, Massachusetts Institute of Technology.

Behavior of Mixtures of Hydrocarbons Near the Critical Region, by Earl S. Hill and R. F. Nielson, Stanolind Oil and Gas Co.

Significance of the Critical Phenomena in Oil and Gas Production, by D. L. Katz and C. C. Singleterry, University of Michigan, (T.P. 971; Petrol. Tech., Aug.)

Developments and Production Problems in High-pressure Distillate Pools, by E. V. Foran, Consulting Engineer, Parker Knode, Foran & Boatright.

7:00 p.m.—Banquet. Tickets, $2 each. Roof Garden, Plaza Hotel.

Friday, October 7

9:00 a.m.—Fifth Session, Ball Room, Plaza Hotel. Harold Vance, Chairman; W. A. Alexander and E. P. Hayes, Associate Chairmen.

The Application of Gravel-packing to Oil Wells in California, by W. A. Clark, The Texas Company.

New Developments in the Chemical Treatment of Wells, by P. E. Fitzgerald, Dowell, Inc.

Effects of Acid Treatment Upon the Ultimate Recovery from Some Limestone Fields in Kansas, by R. E. Heithecker, U. S. Bureau of Mines.

A Visual Study of the Flow of Air-water Mixtures in a Vertical Pipe, by R. L. Huntington and Sylvan Cromer, University of Oklahoma.

Fluid Level Determination with the Echometer, by J. J. Jakosky, International Geophysics, Inc.

1:30 p.m.—Sixth Session, Ball Room, Plaza Hotel. M. Albertson, Chairman; H. H. Power, Associate Chairman.

The Development of Decline Curve Analysis by Valuation Classes at the University of Oklahoma, by E. H. Gross, University of Oklahoma.

Economics of Repressuring, by R. J. Schilthuis, Humble Oil & Refining Co.

Geophysical Possibilities of Soil Analysis, by Mitchell Tucker, Geological Scientific Service Company.

Texas Gulf Coast

Third operator announces location in Old Ocean field.

New sand at Eureka flowing 30 barrels fluid per hour.

Houston.—John H. Blaffer has announced location for the first try for a major extension at Old Ocean field, Brazoria County, at S. M. Patterson et al's 1, 650 feet out of the southwest corner of a 273.1-acre tract in the Polly & Chance Survey, ¾ mile north of production.

Blaffer has completed wells at South Houston, Hardin and Jennings. Old Ocean is probably his first major project, involving a drilling obligation for a 10,500-foot well or deeper. Old Ocean is the deepest producing field in Texas and has one of the largest sand sections of any field in the territory. Harrison & Abercrombie discovered the field and has been the sole operator in the area. Development has been orderly, and little information concerning the area has been given out. Sun Oil Company has a location in the district, but has not started drilling.

West of Cotton Lake, Chambers County, F. A. Gillispie has set casing in Kirby Petroleum Company 1 for a production test. The wildcat was drilled to 6523 feet in sandy shale and logged broken shows from 6377 to 6397 feet, 6407 to 6415 feet, 6415 to 6423 feet, and salt water sand from 6473 to 6483 feet. Seven-inch casing has been set at 6470 feet and will be perforated at the broken sands showing oil.

Southwest of production at South Cotton Lake, Chambers County, J. R. Turnbull is completing Casey 2, S. Barrow Survey, flowing 10 barrels of oil per hour through ⅛-inch choke from 6528 feet.

About 2000 feet northeast of production at Fairbanks, Harris County, Stanolind Oil & Gas Company is preparing to make a production test on Schumacher 1, J. Doswell Survey. After drilling to 7940 feet, 7-inch casing was set at 7255 feet. Sand showing oil was logged from 7208 to 7212 feet; shale from 7212 to 7216 feet; sand showing oil from 7216 to 7220 feet, and salt water sands from 7220 to 7225 feet. Some time ago a drill-stem test was attempted from 7190 to 7225 feet, and the crew recovered only mud and no oil.

On the northwest edge of Clinton, Harris County, Stanolind Oil & Gas Company is completing P. Weber 2, at 4035 feet. After setting 5½-inch casing at 4016 feet, screen and liner was set. The well came in flowing 213 barrels of oil in 17 hours through ¼-inch choke. Tubing pressure was 1280 pounds and casing pressure 1580 pounds.

New Eureka Sand

On the northwest side of Eureka, Harris County, Jack Frazier's L. Lackner 1, H. Reinerman Survey, was flowing an estimated 30 barrels of fluid per hour, including some salt water, from a new sand. Flowing is through ¼-inch choke with tubing pressure of 1250 pounds and casing pressure of 1600 pounds, with casing perforated from 8082 to 8094 feet.

Stanolind Oil & Gas Company has announced its first location at Clear Lake, Harris County, Sowden 1, 466 feet north and 466 feet west of the most westerly southeast corner of the Sowden 288-acre tract in the J. Lindsey Survey. It is 933 feet west of the discovery well. West Production Company discovered the field some time ago on a Stanolind Oil & Gas Company farmout.

Wilson Oil Company completed House 15 at Humble, Harris County, in what is believed to be a new sand. The well made 460 barrels of pipe line oil daily through ¼-inch choke. Tubing pressure was 400 pounds and casing pressure was 700 pounds. Oil sands were logged from 3995 to 4028 feet.

In the Lovell Lake area, Jefferson County, Geo. H. Echols et al abandoned American National Bank 1, J. J. French Survey, at 8515 feet. A sandy-shale formation with a slight show of oil was cored from 8143 to 8147 feet. Salt water sands were shown at 8494 to 8515 feet.

Humble Oil & Refining Company has made location for a well in the Cheek area, Jefferson County. M. Todd 1 is 466 feet from the southwest line and 466 feet from the southeast line of a 216-acre tract in the Wm. Carr Survey, ½ mile west of the discovery well.

Sun Oil Company announced location for an important well in Galveston County last week. At Bolivar prospect, location was made for Humphreys 3, 467 feet east of the west line of survey and 200 feet north of the G. C. & S. F. Railroad in the R. Barrow Survey. This is the third well to be drilled on the prospect. In the Green's Lake area Sun Oil Company and Humble Oil & Refining Company are preparing to workover Houston Farms Development Company 1, 466 feet southeast of the northwest line of lease and survey and 526 feet southwest of the northeast line of lease in the D. Buckley Survey.

Stanolind Oil & Gas Company has completed another well at Sandy Point, Brazoria County. Fite 4 made 394 barrels daily through ¼-inch choke with tubing and casing pressure of 575 pounds. The well was completed in sand from 6490 to 6493½ feet.

Gulf Oil Corporation completed another well in the deep sand at Segno, Polk County, last week. Regan 3, I&GN Survey No. 15, made 453 barrels daily through ¼-inch choke after casing was perforated with 24 holes from 8132 to 8137 feet. Tubing pressure was 850 pounds and casing pressure 1550 pounds.

Humble Oil & Refining Company announced location for two wildcats in Wharton County. Hancock 1 is east of Louise and on a 40-acre tract in the L. L. Miller Survey. F. B. & D. Duncan 1 is in the Spanish Camp area, A. Edgars Survey.

Ohio Oil Company's second well at North Markham is a north offset to the discovery well. It is 666 feet west of the most southerly southeast line and 477 feet north of the most southerly line of I&GN Survey No. 2. It is on the Carlson tract.

TEXAS GULF COAST Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Anahuac—		
Humble, Middleton 32	220	7080
Batson—		
Atlantic, Cruse 2	264	5127
Dickinson—		
Humble, Leith 1	725	8714
Pure, Stewart A-2	769	8197
Esperson—		
General Crude, Fee 32	291	2644
Fairbanks—		
Amerada-Stanolind, Adell 1	621	6855
Gem Oil Co., Reid 6	240	6855
Mortex Oil Co., Reid 2	663	6852
Windsor Oil Co., Parker 3	655	6841
Friendswood—		
Humble, Beamer 23	600	6047
Goodwin B-7	*	6209
Whitcomb 4	579	6046
Green's Lake—		
Sun, Houston Farms 2	29	6818
Hardin—		
Atlantic, Johnson 1	88	7713
Commerce Oil Co., Roberts 1	436	7605
Hastings—		
Humble, Beers G-1	467	6077
Stanolind, McDonald 2	387	6080
Moore C-9	628	6080
Paul 23	635	5834
Ramley 7	567	6080
Humble—		
Wilson Oil Co., House 15	460	4030
Sandy Point—		
Stanolind, Fite 4	394	6506
Segno—		
Gulf, Regan 3	453	8137
Spurger—		
Republic, Fee 12	617	7690
Tomball—		
Humble, Beck 1	600	5569
Holderreith 4	384	5555
Martens 3	528	5568
Van Vleck—		
Skelly, Norris 1	39	7087
Withers—		
Smith & McDannald, Britton 3	55	5551
Jefferson County—		
Geo. Echols, American National Bank 1, Lovell Lake area, J. J. French sur	*	8515
Matagorda County—		
Ohio Oil Co., Cornelius 1, North Markham area, P. C. Yarborough sur	118	7730

*Failures; †Junked; ¶Million cu. ft. gas.

Texas drilling permits jump to 368

The Texas Railroad Commission last week approved permits for drilling 368 new wells in Texas, 153 more than were allowed the week before.

There were 48 locations approved in the East Texas field, including 21 in Gregg, 15 in Rusk, 11 in Upshur, and 1 in Smith County. Sixteen locations were reported from the remainder of the East Central Texas area.

The commission approved 37 permits in West Texas, with 13 in Ector County, while West Central Texas operators reported 14.

Operators in the Gulf Coast area were allowed 76 locations, with 15 in Nueces and 14 in Harris County. There were 54 permits approved in Southwest Texas, including 14 in Duval and 11 in McMullen County.

The North Texas district topped the list with 106 new locations, including 48 in Wichita, 17 in Young, 12 in Archer, and 10 in Clay County. Operators in the Panhandle were allowed 17 permits.

South Louisiana

New producing horizon discovered in Lake Long field.
Timbalier Bay well is testing in new sand level.
New sand at Venice indicated to be 100 feet thick.

Lake Charles.—Fohs Oil Company discovered a new producing horizon ¼ mile south of production at Lake Long, Lafourche Parish, September 15, when State Lake Long 5 came in flowing 520 barrels of pipe line oil daily through 12/64-inch choke from Miocene. Tubing pressure was 1800 pounds and casing pressure 1000 pounds. Casing was perforated with 12 shots from 10,232 to 10,236 feet. Location has been made for State Lake Long 6, ¼ mile east.

Amerada Petroleum Corporation and Louisiana Land & Exploration Company are attempting to open a new sand at Raceland, Lafourche Parish. Casing has been perforated from 11,865 to 11,924 feet, and drill-stem test is to be made. An electrical logging device could not be run to this depth, but oil showed in cuttings. If the deep horizon is not productive, hole will be plugged back for other tests.

At Timbalier Bay, Lafourche Parish, Gulf Oil Corporation is attempting to open a new sand in State Timbalier Bay PP 4. A drill-stem test at 5340 feet showed 350 pounds pressure, 90 feet of mud, 170 feet of oil-cut mud, and 90 feet of oil and sand. Screen and liner are being set for a production test.

Sun Oil Company has made location for a second test at the new Chacahoula field, Lafourche Parish. Dibert, Stark & Brown 3 is 35 feet from the discovery well, and it is believed that a directional hole will be drilled. The foot measurements are 4348 feet south and 1609 feet east of the northwest corner of Section 70-15s-15e.

After drilling a number of deep tests at Bayou Blue, Iberville Parish, Humble Oil & Refining Company brought in its first deep well from a new sand last week. Wilbert 8 came in flowing 15 barrels of 35.2 gravity oil per hour from Miocene at 5209 feet. Tubing pressure was 350 pounds and casing pressure 750 pounds. It was drilled to 5209 feet in sand topped at 5203 feet. A drill-stem test from 5173 to 5209 feet showed 4590 feet of oil and gas.

Standard Oil Company of Louisiana brought in the second well from the new sand discovered by Louisiana Crusader Oil Company, ¾ mile north of production at Choctaw, Iberville Parish, last week. Morley Cypress 1, 300 feet from the discovery well, made 590 barrels per day through ¼-inch choke from 8274 feet. Oil sand was topped at 8260 feet, where a drill-stem test showed 44 stands of oil.

About 250 feet from the discovery well for the deep sand on the north side of Choctaw, Louisiana Crusader Oil Company's Schwing 3 is drilling below the established producing horizon. It was down to 8390 feet in sandy lime last week after coring a sand showing oil from 8376 to 8388 feet. A sand was also logged from 8342 to 8351 feet which showed 240 feet of oil and 500 feet of mud after the testing tool had slipped. The test was made in 4 minutes through ¼-inch chokes.

Shell Petroleum Corporation announced location last week for a deep test on the La Pice prospect in St. James Parish. Schexneyder 1 is 2900 feet north and 600 feet west of the southeast corner of Section 38-12s-15e.

At Venice, Plaquemines Parish, Tide Water Associated Oil Company's Buras Levee 1 was completed in a new sand which is over 100 feet thick. It also discovered another 90-foot sand up the hole, which will be tested by a twin well, Buras Levee 2, 125 feet west of No. 1. Buras Levee 1 is 2700 feet from the established 7200-foot producing horizon at Venice, in the southern portion of the Mississippi Delta. After perforating with 280 shots in 40 feet of the 100-foot section from 5618 to 5658 feet it flowed 1180 barrels daily through ⅜-inch choke, or 49 barrels per hour, with tubing pressure of 600 pounds. The casing was sealed. Through ¼-inch choke it flowed 625 barrels daily with tubing pressure of 750 pounds. Gas/oil ratio was 600 to 1.

This new Miocene discovery at Venice embraces a section of sand from 5697 to 5705 feet, which is more sand than is found at Lafitte, the largest in the district. Tide Water Associated Oil Company is the principal lease holder in the district, with approximately 10,000 acres. Humble Oil & Refining Company and Gulf Oil Corporation have interests.

Gulf Oil Corporation is attempting to extend the new Grand Bay field, Plaquemines Parish, 1300 feet west with Grand Prairie Levee Distirct 2-A, being swabbed at 6154 feet. After setting 9⅝-inch casing at 6125 feet, the cement was drilled out to 6146 feet. Tubing was run and the hole was swabbed to 1000 feet. Pressure built up to 1700 pounds on the tubing. The well started flowing washwater and oil through ¼-inch choke, tubing pressure 200 and casing pressure 500 pounds. It flowed for a short time and then went dead. The hole was carried 8 feet deeper and is testing.

Gulf Oil Corporation completed another well at Quarantine Bay, Plaquemines Parish, last week. Orleans Levee Board District 1-A made 400 barrels of pipe line oil daily through 7/32-inch choke from 8189 feet. Seven-inch casing was set at 8162 feet, and broken sandy shale was cored from 8144 to 8187 feet.

Amerada Petroleum Corporation and Louisiana Land & Exploration Company are attempting to open a new sand at Bayou Des Allemands, St. Charles and Lafourche Parishes. St. Charles Land Company 2 showed gas and distillate from 8900 to 8920 feet. After flowing for several hours the well died and now is being swabbed.

The Texas Company is attempting to discover a new sand in State Bay St. Elaine 18 at Bay St. Elaine field, Terrebonne Parish. Last week the hole was bottomed at 6811 feet in hard shale. Cores from 6633 to 6690 feet were shale with shows of oil. After reaming to 6775 feet, the pipe was stuck and the well blew out, making mud, sand, gas and a little oil. The hole bridged.

South of production at Gibson, Terrebonne Parish, Shell Petroleum Corporation made another test on Kuntz 1, and it only showed salt water and a little oil. Casing was perforated from 8883 to 8888 feet and the well flowed 21 barrels of fluid per hour through 10/64-inch choke, 88 percent salt water and 12 percent oil.

In the South Roanoke area, Jefferson Davis Parish, Continental Oil Company is cementing a leak between the casing and liner before making a production test in Joe Sturdivant 1. The well was drilled to 12,088 feet, and 2917 feet of 6⅝-inch casing was set at 12,088 feet. The well had gas shows around 9925 feet. It will be tested in the Heterostegina formation.

The Texas Company has entered the Villa Platte field, Evangeline Parish, by staking location for E. B. Norman 1, 953 feet north and 256 feet west of the most easterly south corner of Section 27-3s-2e.

Wildcats Abandoned

In the Lowery area, Cameron Parish, Pure Oil Company abandoned Calcasieu National Bank 2, Section 18-12s-4w, at 7989 feet. No shows of importance were cored. East of Abbeville, Vermilion Parish, DeSoto Oil Company's A. W. Richardson 1, Section 30-12s-4e, was dry at 7110 feet.

Pure Oil Company's first well in the West Gueydan field, Vermilion Parish, has missed the regular producing horizon and is drilling deeper. Vermilion Irrigation Company 1 was drilling in shale at 7790 feet last week and will be carried to 9000 feet if production is not found at a shallower depth.

In the Willow Lake area, Cameron Parish, Union Sulphur Company's Miami Corporation 1 was drilling in shale at 9418 feet after logging a water sand at 9166 to 9171 feet.

SOUTH LOUISIANA
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Bayou Blue—		
Humble, Wilbert 8	360	5209
Jennings—		
Shell, Community 4	303	6345
New Iberia—		
William Helis, Bolivar 5	250	3180
Texas Co., Hebert 2	96	4555
Valentine—		
Pan American, A. Robichaux 1	*	6910
Venice—		
Tide Water, Buras Levee 1	288	5658
Cameron Parish—		
Pure, Calcasieu National 1, 18-12s-4w	*	7989
Vermilion Parish—		
DeSoto Oil Co., Richardson 1, 30-12s-4e	*	7110

*Failures; †Junked; ‡Million cu. ft. gas.

North Louisiana Fields

Offset to discovery making second Shreveport producer.

Southwest edge well at Cotton Valley flows 1025 barrels.

Shreveport.—Logging 19 feet of saturated basal Glen Rose lime (Pettit), R. E. Allison's Ellerbe 2, C SE NE 28-18n-14w, Caddo Parish, west offset to the same operator's discovery well of the new Shreveport field, gave indications last week of being the second oil producer for the new area. With elevation of 170 feet, this test logged top of the porous saturated lime at 5546 feet. Only two cores were taken in the Pettit horizon, one from 5540 to 5554 feet with 12 feet recovery, and the other from 5554 to 5569 feet with 9 feet recovery. Total depth is 5569 feet. Operators began preparations immediately to set final casing. The test checked practically even with the discovery.

Six miles southeast of the discovery well diagonally across the city of Shreveport, F. W. Martin and Superior Oil Corporation's Andrew Querbes 1, irregular Section 37-17n-13w, ran electrical tester Thursday to 6107 feet. A strong gas showing was encountered while the test was drilling around 5950 feet but whether this came from the Pettit horizon or higher up the hole was not revealed as operators have withheld all information since the test logged top of anhydrite stringer at 4055 feet (elevation 173 feet), which was 12 feet higher than Allison's discovery well.

Standard Oil Company of Louisiana's E. L. Stewart 1, SE SE 32-21n-10w, southwest edge test at Cotton Valley, Webster Parish, after second perforation in the "D" sand of the lower Marine from 8505 to 8512 feet, was completed flowing 1025 barrels in 24 hours through 24/64-inch tubing choke. It is the fourth crude oil producer for the lower Marine in that field.

A hearing was held in Baton Rouge Thursday before Conservation Commissioner William G. Rankin, and Dr. J. A. Shaw, director of the commission's minerals division, on a proposed amendment to Order No. 10 regulating production of oil and gas in the Cotton Valley field, Webster Parish, and also on rules and regulations for the deeper horizons of the old shallow Shongaloo field, Webster Parish.

Stanolind Oil & Gas Company, which completed the first crude oil producer in the lower Marine at Cotton Valley, this being Pardee Company 1, Section 36-21n-10w, on the southeast flank, proposed that the 80-acre spacing rule now in effect for the 60 gas-distillate wells of the lower Marine be made to apply to crude oil producers on the flanks of the field and that proration between wells be based on space voidage with an adjustment from bottom-hole pressure and that oil production allowable be based upon the market for gas. Some opposition was voiced to 80-acre spacing for crude oil wells and on the plan for basing crude oil production on the market for gas. The four crude oil producers in the lower Marine at Cotton Valley have been given a top allowable of 700 barrels daily per well but proration has been more or less tacitly left up to the pipe line companies to take what percent of that amount they desired. There has been considerable sentiment for a 40-acre spacing for oil wells in the lower Marine.

Magnolia Petroleum Company, which owns the lone lower Marine gas-distillate well in the Shongaloo field, asked for a 160-acre spacing rule for deep tests there, claiming it was economically unprofitable to develop that horizon in that field on an 80-acre rule. The discovery well there in the lower Marine had a small volume. No decision on these matters was immediately announced.

Continental Oil Company last week abandoned Singer Manufacturing Company 1, C N½ NE NW 3-15n-11e, Madison Parish, northeast Louisiana, which found an interior salt dome. Total depth was 4345 feet, the bit still being in the salt which was logged at 4196 feet; elevation was 82 feet. It topped anhydrite at 4005 feet and logged igneous rock from 2227 to 2508 feet. This was the first of a series of tests on a large block held in that vicinity by the company.

Two parts of snow or powdered ice and three parts of calcium chloride, intimately mixed, will produce laboratory temperatures of 25 degrees or more below zero, Fahrenheit.

NORTH LOUISIANA

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Bossier (Sligo)—		
Triangle Drlg. Co., Roy A-2, 18-17n-11w	150	3144
Caddo (Pine Island)—		
L. L. Davidson, Muslow 3, 26-21n-16w	50	2253
Concordia (Wildcat)—		
Benedum et al, Allen 1, 35-5n-8e..	*	6005
Grant (Urania)—		
J. E. Grandstaff, Morrison 1, 10-9n-1e	15	1530
Morehouse (Monroe)—		
Union Prod. Co., Fee 71 (well No. 4), 22-21n-4e	¶8	2170
Red River (Bull Bayou)—		
J. C. Prine, Haynes 2 20-13n-10w..	75	1398
Sabine (Zwolle)—		
Major Oil Co., Loring 1 21-7n-13w	*	2615
Webster (Cotton Valley)—		
Standard of La., E. L. Stewart 1, 32-21n-10w (sec. completion) ...	1025	8512

*Failures; †Junked; ¶Million cu. ft. gas.

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SHREVEPORT LOUISIANA

Lake Charles—Houma—Converse
New Iberia—Monroe
Cotton Valley—Greggton
Houston—Magnolia

Arkansas Fields

Schuler extended southeast; now has 81 wells producing.

El Dorado, Arkansas.—Completion of four wells last week in the Schuler field, Union County, bringing to 81 the number of Jones sand (lower Marine) producers there, and completion of the eighth well in the Buckner field, Columbia County, featured new production reports last week in Arkansas.

Most important of the four Schuler producers was a quarter-mile southeast extension of that field in Atlantic Refining Company's B. M. Dumas 2, SE NE NW 21-18-17, which logged Jones sand from 7608 to 7642 feet, set 7-inch casing at 7642 feet, 2 feet off bottom and perforated at 7609-15 feet, at 7619-25 feet and 7635-38 feet.

Standard Oil Company of Louisiana, which owns all the eight producers at Buckner, had to use 4000 gallons of acid to complete J. L. Warren 2, C NE NE 18-16-22, which was finally brought in flowing 28 barrels per hour through ¼-inch tubing choke after once going dead after being swabbed in. This test topped Buckner formation at 6977 feet, and topped the Permian lime at 7212 feet with top of porosity at 7221 feet. Total depth was 7255 feet.

Excessive gas production with the oil and the existence or imminence of such prompted the Arkansas Board of Conservation last week to order a curtailment of oil production for the 102 oil wells in the Miller County, Arkansas, part of the Rodessa field to be cut to 100 barrels daily, effective at 7 a.m. October 1.

The board further decreed that all the oil and gas wells in the Miller County end of Rodessa be shut down from 7 a.m. October 20 to the same hour October 27 for the taking of reservoir pressure tests, and gathering such other engineering data as necessary for making recommendations to prevent any waste of oil and gas in the field, which was discovered in June, 1937. The board decreed that when the shutdown period expires October 27 that the per-well allowable will revert to 100 barrels daily until changed by order. The daily average production of the field is 6225 barrels. Some wells are not producing as much as 100 barrels daily.

Miami, Fla.—Four thousand feet of casing has been ordered for Florida Oil Discovery Company's Sholtz 2, SW SW NE 9-15s-13e, Levy County, Florida, which is shut down in slate at base of the blue shale series at 3986 feet.

Sun Oil Company has a seismograph unit working toward Dade County, from the north end of Collier County. It is reported that a deep test will be started by November in the north end of Monroe County.

Resume drilling in Mississippi deep test

Jackson, Miss.—Drilling has been resumed in in Southern Natural Gas Company's Progressive Realty Company 1, SE SW 35-6n-4w, deep wildcat test in Hinds County, Mississippi, near Edwards where a salt dome was found several months ago by this company. The test was drilling at 6975 feet in chalk last week, and plans are to continue to 9000 feet.

In the southwest corner of Madison County near the Hinds County line, Gulf Oil Corporation is leasing after gravimeter unit is reported to have located a piercement type salt dome. Union Producing Company has a reflection seismograph unit working in Hinds and Rankin counties.

In southeast Mississippi, Ryan & Anderson's J. J. Newman Lumber Company 2, C SW 9-1s-8w, is drilling hard lime and shale at 6495 feet, after a core in chalk from 6145 to 6156 feet created considerable interest in analysis.

ARKANSAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Columbia (Buckner)—		
Standard of La., J. L. Warren 2, 18-16-22	672	7255
Union (Schuler)—		
Lion O. R. Co., Clarence 1, 18-18-17	1200	7700
Morgan A-6, 18-18-17	1800	7674
Dee 2, 17-18-17	1500	7640
Atlantic, B. M. Dumas 2, 21-18-17	730	7644

*Failures; †Junked; ¶Million cu. ft. gas.

Illinois Developments

Wayne County well makes record 250 barrels per hour. Minor extensions in Marion, Fayette, Richland counties.

Olney, Ill.—A new Illinois production record by a Wayne County test, first McClosky sand production in a booming Marion County field, and minor extensions to fields in Marion, Fayette and Richland counties marked activity during the past week.

H. H. Weinert, Inc.'s Dr. I. Morlan B-1, Section 16-3s-7e, in the Weinert pool of Big Mound Township, Wayne County, started flowing 250 barrels an hour and had to be shut in after a few hours for lack of storage. Its performance indicated production in the first 24 hours would have topped 5000 barrels. The previous record was this operator's I. Morlan 2, Section 33-2s-7e, completed two weeks ago with an initial production of 3800 barrels daily.

In the Lake Centralia field of Marion County, two tests were drilled to the McClosky sand last week but only one was permitted to produce from that formation. The Texas Company, which opened the pool several months ago, drilled Luttrell 2, Section 16-2n-2e, to 2108 feet, the top of the McClosky, at which point casing was set. On the east edge of the pool, the company announced that the test was being plugged back to 2074 feet to perforate. Information as to the horizons to be tested was lacking.

First regular McClosky production in this pool, where other wells are producing from the higher Benoist sand, is from Kingwood Oil Company's Maxwell 1, Section 31-2n-2e, which flowed 2000 barrels the first 48 hours through the casing. It established one of the best production records for the field and was expected to show even better after tubing. The well topped the McClosky at 1870 feet and recovered an excellent 20-foot core. Success of the test is expected to hasten development in the field, and may result in a number of twin wells which are prevalent in other sections of the basin.

The Texas Company's Tate 1, discovery well, was drilled to the McClosky from which some production was obtained, but the well was shortly plugged back to the Benoist. The McClosky is found 200 feet below the Benoist in this area and about 1000 feet higher than in the eastern part of the basin where relatively heavy production is obtained from this formation in Richland, Wayne and Clay counties.

A ¼-mile easterly extension to the Lake Centralia field was indicated by Zephyr Oil Company's Langford 1 which topped the Benoist at 1907 feet. It was cleaning out.

In eastern Fayette County, the St. Elmo field was extended 1 mile to the southeast by Blackwell Oil Company's Reed 1, Section 31-7n-3e, located on a 3-acre lease. A 22-foot Stein sand saturation was found below 1551 feet.

The North Olney oil field was moved to the Olney city limits when The Texas Company's Harrolle 1, Section 27-4n-10e, cored 5 feet of McClosky saturation. Casing was being set. In the north end of the field, Wicklund Development Company's Sager 4, Section 22-4n-10e, was coring for casing seat at 2990 feet. The well is to be deepened into the McClosky.

Other operations in the North Olney field were: Sylvester et al's E. G. Miller 3, Section 26-4n-10e, installing pump with bottom at 3137 feet following treatment with two doses of acid; Wicklund Development Company's J. Schnepper 1, Section 21-4n-10e, location; The Texas Company's W. Winters 1, Section 22-4n-10e, drilling at 2500 feet, and the same company's Winters-Elliott 1, Section 22-4n-10e, derrick up; Wicklund Development Company's R. Sager 2, Section 22-4n-10e, derrick up; Raitman et al's G. O'Donnell A-3, Section 27-4n-10e, casing set to McClosky, total depth 3090 feet; Lough et al's Mrs. F. Schilt 1, Section 25-4n-10e, surface pipe set and awaiting rotary rig to drill to McClosky level; Pyramid Oil Company's G. Sly 4, Section 22-4n-10e, drilling at 2830 feet, University of Chicago (Bird Haven) 3, Section 26-4n-10e, drilling at 2710 feet, and E. J. Houser 2, Section 15-4n-10e, loca-

tion; Fortney Oil Company's E. G. Miller 4, Section 26-4n-10e, clearing location.

The first test in western Lawrence County, Judy & Baldwin's W. F. Jennings 1, Section 2-4n-13w, Petty Township, topped the McClosky at 1802 feet and was cementing casing at that depth. A saturation described as "good" was encountered but not cored through.

In Marion County, the deep test of Southwestern Oil & Gas Company on the Benoist farm, north of Sandoval, Section 7-2n-4e, was drilling below 600 feet. The first Benoist sand test was drilled on this farm many years ago, but no drilling has taken place since 1917.

Southeast of Centralia in this county, Illinois Development Company, Limited's Frazier 1, was to be swabbed in an effort to make it a producer from the Petro sand at 840 feet. The well had been plugged back to that depth a month ago. If it fails to make a commercial producer at its present depth, it will be drilled back to the Stein sand where some saturation was encountered.

Boyce & Welch will shortly begin drilling a block of 2000 acres in Montgomery County, Township 10 north and Range 4 west.

With development three miles from the city limits, Fairfield City Council this week will consider an ordinance to restrict town lot drilling similar to that in effect in Olney.

Shell Petroleum Corporation and McBride Oil Company last week leased offices for Illinois production headquarters in the three-story Elks Club Building in Centralia. Conversion of the building into office space will help to alleviate a shortage which exists throughout the Illinois basin area.

ILLINOIS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Clay County—		
Pure, Tetrick Cons. 1	940	3042
H. Scrugham 5	556	3040
Daisey Bunn 1B	508	3050
J. Ullom 2	875	3050
J. H. Smith 3	507	3012
Clinton County—		
Ryan & Anderson, Koeling 1	80	1384
Joe Waltner, Patchin 1	75	1383
Pace & German, Folton & Casco 4	162	1373
J. E. Blanks 1	62	1386
Brazill & Cullem, Fee 1	25	1260
Redwing et al, Hoffman 1	*	1130
Redwing Pet. Co., H. Kohl 1	*	541
J. F. Ryan, Brinkman 1	196	1383
Iroquois O&G Co., Blackburn 1	152	1382
Linier Oil Co., Trimmin 1	206	1387
W. C. McBride, Carson 3	144	1373
Shell, Criley 5	114	1359
Fayette County—		
Sharp & Divers, Miles 1	*	1912
Pat Hudson, Harner 1	*	1760
Canary-Sherman et al, Sefton 1	115	1576
Kingwood Oil Co., Yolton 3	142	1597
W. M. Angle, Ferguson 1	210	1530
Cummings et al, Burtschi 1	183	1535
Max Pray, Ferguson 1	198	1549
Ferguson 2	210	1547
Whisenant, Smith 1	100	1576
Iroquois O&G Co., Wills 1	*	1772
Jefferson County—		
Carter, Foster 3	247	1951
F. Roy 2	240	1963
Dobbs 1	D	1085
Marion County—		
Loper et al, McRoberts 1	624	1750
Morrison, Ada Rittinghouse 1	*	2100
Adams O&G Co., Ballance 3	52	1446
W. Ballance 4	43	1448
Robin H. Brians, Nattier 3	145	1440
Penn-Illinois O&G Co., Nichols 1	*	2265
Marion Oil Co., Wilson 1	*	2230
Wayne County—		
Texas Co., Craven 1	625	3312

(Note: "D" indicates disposal well.)

*Failures; †Junked; ¶Million cu. ft. gas.

Eastern States

New Henderson County, Kentucky, production from Jett.

Sun Oil Company encounters saturation in Indiana test.

Pittsburgh, Pa.—A new Henderson County, Kentucky, oil pool was opened last week by Imperial Oil & Gas Company's F. Mauzy 1 in the Cash Creek section. It produced 120 barrels the first 24 hours on the pump from the Jett sand at 1610 feet.

The test, 5 miles southeast of the center of activity in the Birk City field and 3 miles northeast of Niagara where several small producing wells were drilled in recent years, was planned for the McClosky sand about 300 feet lower, but showed such good prospects in the Jett that it was completed in that formation. A second test on this tract will be started immediately and carried to the McClosky sand, which has been found so prolific in the Birk City field.

W. E. Hupp et al last week paid $6000 in cash and $6000 in oil for the lease on the 248-acre H. A. Jones lease, adjoining the 17-acre Bertie Gibson farm in the Birk City field where a good well was brought in last week. It is the highest price paid for a lease since discovery of the field in April. Property owners are to retain the usual royalty. Hupp is obligated to start a well within 30 days and to have 4 drilled by January 1.

Thompson Drilling Company drilled in B. Gibson 1 for Imperial Oil & Gas Company, which started flowing naturally before swabbing. An estimate on its initial producton was not given by officials other than that it was a "good well." Unofficial estimates on the production rate ran up to 2000 barrels a day.

Carter Oil Company's O. Benham 1 promised a ¾-mile northwest extension to the Birk City field when it cored a total of 15½ feet of McClosky saturation. It was preparing to drill in following setting of casing cement.

A mile west of Utica, Daviess County, A. S. Shaffer et al were swabbing out a well on the Ed Bennett farm which had been drilled to the McClosky 7 years ago. Fifty barrels of oil were recovered in the first 24 hours from the test which had been abandoned after a nitro-glycerine shot failed to produce satisfactory results. The

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well will be acidized this week, and if favorable production results other tests will be drilled in that section.

The showing at the old Bennett well indicates that other McClosky pools exist in Western Kentucky. Until the opening of the Birk City pool this spring, McClosky sand production had been limited to Illinois.

Indiana

In Posey County, Indiana, Sun Oil Company's Murphy 2, Point Township, encountered an oil saturation at 1800 feet and set casing to that depth. On drilling in, an effort will be made to pump the well before shooting or acidizing. The company last week announced two locations in this area: Mrs. Maggie Murphy 1, 660 feet south of the Murphy 1, and the W. W. Gray 2, Section 29, 8s-14w, 800 feet north of the No. 1. The Murphy 1 was drilling at 500 feet.

In an effort to make Evansville the center of the tri-state oil industry of Indiana, Kentucky and Illinois, an aggressive campaign has been launched through a special chamber of commerce committee to gain location of a refinery in that Indiana city. Headed by Louis Ruthenburg, committee members are Jerome D. Beeler, vice chairman, William Schear, C. B. Enlow, A. J. Hoffman and Ed J. Fehn.

In the New York-Pennsylvania deep sand gas area, Empire Producing Company's F. Wilson 1, Willing Township, Allegany County, New York, topped the Oriskany at 4904 feet and had a gas flow of 2,000,000 cubic feet a day. It was being deepened.

Completed operations dropped in all sections of the Eastern States area last week except Pennsylvania, where a gain from 3 to 5 was registered. The net loss was 10 wells. Pennsylvania had 1 small oil well, 3 gas wells and 1 dry hole. Ohio completions declined from 26 to 23, the past week's lot including 5 oil wells averaging 26 barrels daily, 13 gas wells and 5 dry holes. In West Virginia, completions dropped 1 to 14, which included 4 oil wells averaging 9 barrels initial, 9 gas wells and 1 dry hole. Kentucky completed operations dropped from 25 to 17, of which 8 were oil wells averaging 134 barrels initial, 1 gas well and 8 dry holes.

EASTERN FIELDS Completions

OHIO

Company, Well and Location	Init. Prod. Bbls.	Depth
Athens County—		
Nuzum, Niggemyer 1	¶1.00	1055
Speary O&G Co., Smith 5	¶.50	544
D. T. Orndoff, Linscott 1	¶.25	535
Williams Bros, Snodgrass 1	¶.25	1785
Fairfield County—		
City Nat. Gas Works, Brillman 1	¶.10	2086
Guernsey County—		
M. J. Purdy, Bates 1	¶.10	1480
Ferguson & Lanning, Siron 1	¶	1263
Knox County—		
Kundtz-Hulse, Inc., Stone 6	15	3205
H. E. Perkins, Blubaugh 1	¶.06	3150
Lawrence County—		
Portage Producers, Cambria Clay 1	¶1.00	2994
Licking County—		
McClay Bros., Porter 5	100	3090
Vandergrift Oil Co., Mauk 2	10	782
Bebout & Son, Wright 2	2	767
Armbruster & Stricker, Davis 1	¶.13	661
Lorain County—		
O'Mara & Sturn, Flowers 1	¶	943
Meigs County—		
Nelson et al, Koenig 2	¶.30	1002
Morgan County—		
Penn Contracting Co., McPeak 2	*	869
Perry County—		
Preston Oil Co., Sunday Creek 1666	*	3780
Tuscarawas County—		
Capital Dr. Co., Asher 6	*	3737
Washington County—		
Metcalf et al, King 2	5	1345
Williams Prod. Co., Miller 5	¶.90	1216
Anderson et al, Anderson 5	*	1523
D. T. Orndoff, Perdew 7	*	1509

KENTUCKY

Breckenridge County—		
Glasscock & Flesher, Embry 2	*	618
Butler County—		
Evans et al, Perry 1	*	....
Cumberland Pet. Co. et al, Harper 3	*	....
Harper 4	25	190
Daviess County—		
Ashby et al, Jagoe 1	200	1872
Benedum-Trees et al, Calhoun 2	200	1745
A. C. R. Oil Co., Newton 1	197	....
Hancock County—		
Eureka Dr. Co., Baker Bros. 1	¶.37	655
Henderson County—		
Carter & W. E. Hupp, Mauzey-Gatewood 2	250	....
Carter, Boswell 5	150	....
McLean County—		
J. C. Ellis, Tucker 1	*	2120
Martin County—		
Virginia G&O Co., Federal V-1266	*	1578
Ohio County—		
Mayers et al, Boyd 2	25	....
Nollem O&G Co., Crowe 9	20	....
Ellis & Ashby, Howard 2	*	....
Stewart et al, Dunn 21	*	....
Hardie et al, Roach 9	*	....

WEST VIRGINIA

Cabel Bounty—		
Meabon et al, Wilson-Walton 1	20	1417
Thermal Gas Co., Porter 1	¶.10	2027
Calhoun County—		
Hope Nat. Gas Co., Hardman 7816	¶.43	1577
Gilmer County—		
Hope Nat. Gas Co., Weaver 7807	¶.03	....
Kanawha County—		
W. Va. Gas Corp., Fisher-Newhouse 1	¶4.36	4955
United Carbon Co., Miller 1	¶3.00	5015
Lincoln County—		
Cambridge Gas Co., Mullins 1	¶.15	3647
Putnam County—		
Huntington-Oklahoma Gas Co., Coyner 1	¶.08	2116
Ritchie County—		
Deem, McGregor Heirs 4	5	1808
Hope Nat. Gas Co., Phillips 6764	¶.60	1857
Roane County—		
Boggs, McQuain 2	*	1253
Wayne County—		
Southern W. Va. O&G Co., Preston 1	¶.21	3258
Wood County—		
B. C. Strain, Strain 3	5	2356
Lowther, Shuman et al, Little 1	5	2205

PENNSYLVANIA

Bradford District		
Ryder Scott Co., Fee	3	....
Harry M. Krampf, Bovaird	½	....
Victory Oil Co., Wright	1	....
Brink & Brink, 268 Bing	1	....
J. S. Brown, Bell	1	....
Penn Valley Crude Oil Corp., Redfield	10	....
Bradford Transit Co., 9 wells	9	....
Forest Oil Corp., 2 wells	2	....
Niagara Oil Corp., 5 wells	5	....
Bradford: Water (Pressure) Well		
Forest Oil Corp.	...	....
Butler-Armstrong District		
Haverstraw & Co., Bame	3	....
D. L. Baird et al, Campbell	3	....
Middle District		
Orrin D. McCray, McCray	2	....
John Exley et al, Switzer	1	....
Rice, Harper et al, Richey	4	....
Cities Service Oil Co., Red Fox	10	....
New York-Pennsylvania: Gas Field		
New York State Nat. Gas Co., Morley	*	....
Fayette County—		
Spear et al, Williams 1	*	....
Greene County—		
Garrison, Stoneking 1	¶	2650
Potter County—		
New York State Nat. Gas Co., Hanes 1	¶10.50	4118
G. L. Cabot, Inc., Grange 1	¶3.70	4909
Washington County—		
Union G&O Corp., Craft 2	10	2950

NEW YORK

Allegany County—		
Van Gelder et al, O'Hara 1	¶6.15	4730

*Failures; †Junked; ¶Million cu. ft. gas.

Rocky Mountain Fields

Osage field production being extended in two directions.

Casper, Wyo.—The Osage field is being extended to the south and west by two wells. Both wells show for better than average production and may indicate a prolific pool in the area toward the Fiddle Creek area where a well drilled several years ago showed for good oil production but was lost through mechanical difficulties. Production in the main sector of the field is largely from shallow sands with small production. George Keisling's 1, NW NE NE 35-46n-64w, swabbed 4 barrels hourly from the Newcastle (Muddy) sand at 1928-56 feet. Storage on lease has been filled and additional tanks are being placed for a complete production test. Updike Brothers are bringing in No. 1, NE SW NE 35-46n-64w, which is fishing for bit lost in hole at 2027 feet with hole full of oil. Well has only penetrated the producing formation a few feet and is estimated to make a better well than the Keisling well. The Updike well is about ½-mile south and west of the nearest producer in the field. The Newcastle sand in these wells is around 25 feet in thickness, it is reported, while in the developed sector of the field 10 feet of sand is considered a good thickness, indicating a larger potential producing horizon on the edge of the field.

Two new drilling operations are being started in the Elk Basin field, Park County, northwestern Wyoming, by Stanolind Oil & Gas Company. The company is moving in for its Elk 5-18, CNW NE NW 30-58n-9w, Elk 2-26, E NE 24-58n-100w, an old producer in the Elk Basin field, will be deepened from 2440 feet in the Dakota sand.

Ohio Oil Company's Trans-Ark 1, CSL SW SW 30-57n-98w, deep test well in the Little Polecat gas field in Park County, found no oil shows to 6929 feet and is plugging back to the Frontier formations from which it was deepened. This well originally completed as a gasser in 1923.

MOUNTAIN STATES Completions

MONTANA

Company, Well and Location	Init. Prod. Bbls.	Depth
Glacier County (Cut Bank Field)—		
Glacier Prod. Co., Mueller 2, cnl ne ne 18-33n-5w	10	2875
Santa Rita O&G Co., Government 1-B, se se sw 5-32n-6w	75	2964
Toole County (Kevin-Sunburst Field)—		
Consolidated Gas Co.'s Lutz 3, csw nw 34-33n-2w	¶2	1477
R. G. Parrent, Engstrom 1, nw nw nw 13-35n-3w	15	1759
V. F. Dahl, Kimball 1, sw se se 1-35n-3w	6	1801
Kluth & Burke, Gunderson 1, se sw sw 18-35n-2w	5	1653
Pfabe & Engleking, Hurley 2, ne ne nw 8-34n-2w	*	1456

WYOMING

Niobrara County (Lance Creek Field)—		
Continental, Apex 3 OPC-3, nw ne nw 34-36n-65w	450	5353

*Failures; †Junked; ¶Million cu. ft. gas.

New Mexico Fields

Opening production between Vacuum and Monument.

Record flow between Eunice and Penrose areas.

Hobbs, N. M.—Production test given Helmerich & Payne and Continental Oil Company's State 1-G-36, C NW SW 36-17s-35e, which indicated a new high-gravity oil pool from lower lime section along a strike between the Vacuum and Monument fields, failed to yield oil in commercial quantities. Coring operations were underway at 4935 feet late last week after the well showed for a 20-barrel pumper following treatment with 1000 gallons of acid at 4920 feet or 1017 feet below sea level. Pipe was cemented at 4879 feet. The well flowed 72 barrels oil in 18 hours by heads when plugs were drilled. Then the fluid column showed signs of exhausting. It is below the water level of the Vacuum field, with an interval of two miles between the two areas.

Extension of the Vacuum field 1¾ miles to the northwest materialized early last week when Ohio Oil Company's State-Bridge 1, C NE NE 20-17s-34e, swabbed 5 to 8 barrels of oil hourly after treatment with 1000 gallons of acid at 4755 feet, or 667 feet sub-sea. This outpost was rated at 50 barrels daily. Additional acid will be employed to try for flowing production. It is ¼-mile southeast of a 5083-foot failure that recorded oil shows in the regular Vacuum pay.

Vacuum field accounted for four of the six new operations assigned to Lea County the past week. The Texas Company has rigged up for State 1-T, C SE NE 25-17s-34e, and was drilling at 900 feet on State 2-N, C NW SW 30-17s-35e. Work is also underway on Standard Oil Company of Texas' State 1-5, C NE SW 27-17s-35e, and Shell Petroleum Corporation's State 4-A, C NE NE 31-17s-35e, all offsetting producers. The Texas Company's State 7-O, an inside location, flowed 144 barrels of oil natural in 3 hours for completion at 4710 feet, or 714 feet sub-sea, gas/oil ratio was 400 feet per barrel.

Continental Oil Company's State 1-I-7, NE NW NE 7-17s-34e, about ¾-mile southwest of a wildcat producer and separated from the Vacuum field by a failure, flowed 82 barrels of oil in 2 hours by heads after 800-quart nitro shot at 4550-4895 feet. It previously swabbed a small volume of oil after using 2000 gallons of acid, which required pressure ranging up to 2850 pounds. An oil producer is needed to perpetuate lease on 3500 acres.

The Texas Company's Lodewick 1, C SW SE 34-18s-33e, recently announced western Lea County wildcat project, was drilling at 560 feet. It may be carried to the Delaware. Jas Mascho et al's Cloyd 2, Lea County wildcat that developed nominal show of free oil and some gas with water in the Delaware at 5018-36 feet, is awaiting orders at 5038 feet. Top of Delaware lime was called at 4922 feet.

Intermediate territory between the Eunice lime field and the Penrose sandy-lime area added two flush producers the past week, including a record flow. Continental Oil Company's State 2-J-2, C NE SE 2-22s-36e, averaged 90 barrels per hour natural for 2 hours on ¾-inch tubing choke from pay at 3770-3840 feet, with an elevation of 3539 feet. On previous test it flowed 206 barrels of 34-gravity oil in 1 hour through small choke on casing with drill pipe in the hole. The company's Lockhart 1-B-1, northeast offset, averaged 50 barrels hourly for 2 hours on ¾-inch choke from pay at 3765-3825 feet. Progressive offsets created by the 40-acre spacing plan will force considerable new drilling in this area.

NEW MEXICO Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Eddy County—		
Western Drl. & Explo. Co., Western 2-A, se se nw 23-17s-29e	25	3040
Neil Wills et al, Colglazer 2, sw sw ne 20-20s-30e	200	1436
Lea County (Eunice)—		
Continental, State 2-J-2, c ne se 2-22s-36e	2160	3840
Continental et al, Lockhart 1-B-1, c sw nw 1-22s-36e	1220	3825
Humble, Fopeano 6, c ne ne 35-20s-36e	20	3850
Shell, State 4-H, c w½ ne se 13-21s-35e	335	3907
Texas Co., State-Lieu 15-H, c sw ne 20-20s-37e	211	3850
Lea County (Hardy)—		
Southern Pet. Explo. Inc., Downes 4, c nw sw 32-21s-37e	168	3780
Two States Oil Co.-Kaseman Est. L. G. Hill-Gulf 2-A, c se sw 31-20s-38e	250	3785
Lea County (Mattix)—		
Great Western Producers, State-Leonard-Gulf 1, c se ne 32-23s-37e	75	3615
Lea County (Penrose)—		
Twin Oil Corp., Corrigan-Amerada 2, c ne ne 4-22s-37e	200	3743
Lea County (Vacuum)—		
Magnolia, State-Bridges 13, c sw nw 25-17s-34e	110	4763
State Bridges 14, c sw ne 25-17s-34e	80	4720
Shell, State 1-G, c se se 22-17s-34e	75	4765
State-Swigart 1, c ne se 25-17s-34e	592	4700
Texas Co., State 1-S, c nw sw 35-17s-34e	240	4675
State 7-O, c se se 36-17s-34e	1152	4710
Lea County (Wildcat)—		
Tide Water Associated, State 1-L, c nw nw 23-1s-36e	*	5294

*Failures; †Junked; ‡Million cu. ft. gas.

Oil companies pay for Arkansas fair exhibit

Contributions of major oil companies operating in Arkansas totaling $30,000 will make possible an exhibit for the state at the New York World's Fair in 1939, it was announced last week by Chairman C. E. Palmer of the state Centennial and Publicity Advisory Commissions.

Half of the oil industry's "$30,000 pot" has already been paid in, and the balance has been pledged, Palmer said.

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California Fields

Wood-Callahan test to go after Rosecrans deep pay. Test between Rio Bravo and Wasco nears 13,000 feet.

Los Angeles.—Returning to the Los Angeles Basin for the first time in four years, Wood-Callahan Oil Company is preparing to spud on a 5-acre tract in the southeast portion of Rosecrans field, where all active companies are developing the deep zone. Rosecrans 1 will go down near the intersection of 150th and San Pedro Streets and will be a direct offset to Bankline Oil Company and The Texas Company wells, one of which is coring in oil sand and slated for completion within 10 days. Rosecrans 1 is within 300 feet of Superior Oil Company's Maxwell 10, which swabbed in for 750 barrels daily a week ago.

Two Good Wells

Barnsdall Oil Company's Exeter-Higgins 4 near Rosecrans and Main Streets at Rosecrans was brought in last week for an initial yield of 1200 barrels daily at 7665 feet. The crew has been shifted to Wanka 3 for a redrill job. Work is understood to have been halted in the company's Trust 6 as it apparently faulted out around 7775 feet. Universal Consolidated's Trust 5, northwest of Figueroa and Rosecrans, was brought in for 1800 barrels daily at 7860 feet and has since been choked in to conform to curtailment regulations.

Core recoveries indicate that Continental Oil Company's KCL A-3, situated in Section 8-27-24, in the Wasco field, Kern, is approximately 50 feet lower structurally than the discovery well brought in last spring. Just when a production test will be made is not known. Since tapping what was supposed to be the top of the Rio Bravo sand, slight cuts have been found below 13,500 feet. This is more than 300 feet deeper than the completion depth of the discovery well, although KCL A-2 prospected to 15,004 feet. KCL A-2 is producing from a bottom of 13,175 feet. It may be that mud has shut off some of the producing formation, and in that case it may be necessary to do considerable swabbing before Continental's second venture at Wasco ultimately comes in.

Several other projects at Wasco are getting down to critical points. Standard Oil Company of California's KCL 8-B-1, south of KCL A-2, is coring below 13,000 feet in shale, while its Mushrush 1, west of the discovery well, is down to approximately 11,800 feet and is coring in shale. Mushrush 1, say scouts, probably will be completed at practically the same depth as the discovery well.

Gas Well Near 1300 Feet

Midway between Wasco and Rio Bravo fields, Continental's Seaboard-Associated KCL C-1, Section 26-27-24, is drilling below 12,900 feet in a siltstone formation which is badly fractured. While no encouragement is reported, top of the Rio Bravo zone is expected soon.

Grimm Enters Round Mountain

H. Paul Grimm, formerly oil umpire for California and now head of Bolsa Chica Oil Corporation, has launched a search for oil in the south Round Mountain field by delegating the Hall-Baker Company to handle his drilling. Under the banner of the Green Bay Oil Company, Grimm will prospect for shallow production in the center of Section 30-28-29.

Union Oil Company has just completed Callender 61 in the Dominguez field. It swabbed in from the eighth zone at 7260 for 360 barrels of 29.5 gravity oil per day. Union's Hellman 5, which was taken off production some months ago because of mechanical difficulties, was recompleted last week for 500 barrels daily at 4235 feet.

The attractiveness of the shallow zone production to be obtained in the Lomita field, south of Los Angeles, has resulted in the organization of the West Basin Oil Company by Allen Brown & Associates, to deepen an old well originally drilled there by the Texas Company in 1921. This old project, situated on an acre parcel at the northeast corner or 236th and Eshelman Street, along the south flank of the central portion of the field, will be deepened from old bottom at 3600 feet down to approximately 5150 feet, to take in the recently opened deep zone. Prospects of developing commercial production in this well is considered highly favorable, since it is offset by Shell's Kettler lease.

Southwest Exploration Company has been awarded state lease on 870 acres of tideland off Huntington Beach under a contract which provides royalties up to 66 percent. The agreement is for 24 years, and drilling is to be from shore, work to start within 30 days.

Los Angeles.—Seaboard Oil Company has closed one of the biggest leasing deals in the state with the acquisition of 52,316 acres 6 miles northwest of Coalinga Nose, Fresno County, where the company jointly aided in the completion of a well with Petroleum Securities Company and Honolulu Oil Corporation a few months ago.

The acreage embraces wildcat territory that takes in Townships 15, 16, 17, 18s and Ranges 12, 13, 14e, all located on what geologists describe as monocline ridge. The prospective structure runs southeast by northwest and is on a direct line with Kettleman Hills North Dome.

CALIFORNIA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Athens-Rosecrans—		
Barnsdall, Exeter-Higgins 4	1034	7665
Superior, Maxwell-Community 10	692	7630
Universal Consolidated, Trust 5	1750	7860
Dominguez—		
Shell, Reyes 96	1300	4860
Union, Callender 61	750	7260
Hellman 5	514	4235
Torrance Extension—		
General, Poggi 9	275	5426
Ring Oil Co., Ring-Hawkins 1	622	5285
Torrance—		
J.E.P. Oil Co., No. 1	600	4967
Kovell Oil Co., No. 3	640	4965
Wilmington—		
Southern California, W-1	716	5695
Sunray Oil Co., Nelson A-7	407	5627
Union Pacific, UP (LB) 82	507	3527
Coalinga—		
Superior, Hight 1	1175	7999
Fruitvale—		
Western Gulf, Price-Stewart 4	235	3870
Kettleman North Dome—		
KNDA, 38-6Q	1535	8205
43-20Q	1650	8914
Standard, 74-7Q	1872	8895
El Capitan—		
Shell, Covarrubias 1-29	801	1500
Ventura Avenue—		
Shell, Edison 31	1830	8447
Tide Water Associated, VL&W,39	86	7020
Jacalitos Hills—		
Jacalitos Pet. Co., No. 1	*	7265

*Failures; †Junked; ‖Million cu. ft. gas.

Michigan Fields

Extensions of two most active areas are under observation.

Mount Pleasant, Mich. — Extension tests to Michigan's two most active fields were under close observation this week as drilling depths neared projected horizons. Otherwise, developments added little in the way of new territory or reserves, and in some cases actually trimmed earlier predicted size of one or more pools.

A record was established during the week, however, when the State Conservation Department issued 44 permits for a 7-day period. This topped the previous high mark of 41 set in March, 1937, during the peak of the Buckeye district boom. Thirty of the 44 permits were for tests in the 1200-1600-foot Traverse lime in southwestern Michigan.

Weller & Dapar's White 1, NW NE NW 2-18n-6w, 1¼ miles east of the Freeman-Redding (Clare County) discovery well, is due to test Monroe lime late this week. It will mark the first Monroe completion east of the discovery, except an offset, since the play was opened at mid-summer.

Previously Monroe lime failures were drilled in Section 5, 1½ miles west of the discovery, and in Section 15, 2 miles south of the discovery. Five producers, all offsets, have been completed in the area, and 1½ miles north of the discovery, Pure Oil Company's Switzer 1, Section 27-19n-6w, Redding, is pumping 5 barrels per day after four acid treatments.

Activity in the Clare play is holding up with 22 tests drilling, 5 rigging, and 6 clearing locations or building rigs at mid-week. Production is from the Monroe limestone with completion depths at approximately 3800-3900 feet.

Three dry holes, one an offset to the north of a 50-barrel-an-hour well, served to slow down the Van Buren County play this week on the north and east flanks. However, operators are

looking for the pool to extend south, and if this theory works out the village of Bloomindale is well in line to have the first good sized town-lot drilling boom in Michigan. Five town-lot tests were drilling this week in the Traverse field.

Extension of the Overisel "21" pool, Allegan County, to the northwest failed when Gordon Oil Company drilled a Traverse lime failure, Vanderkolk 1, two locations northwest of a producer.

American Drilling Company ordered junking of Anderson 1, SE SE SW 32-1n-14w, a wildcat, at 1303 feet, failing to get commercial oil in the Traverse zone. Smith Petroleum Company abandoned Kortering 1, Section 2-4n-15w, at 1499 feet, a wildcat Traverse limestone test.

Potentials for the Southwestern Michigan district are now rated from 25,000 to 35,000 barrels per day, and market outlets are approximately 7500 barrels per day. An attempt to establish a pipe line prorate of 200 barrels per well in flush districts had not brought complete answer to the problem this week, resulting in numerous shut-ins and in some cases shut-downs of drilling wells. A 100-barrel prorate is expected.

Two wildcat plays are being watched closely in Southwestern Michigan following substantial but still questionable commercial oil shows. Newest is Vester Leonard Oil Company's Koning 1, Section 35-3n-16w, Saugatuck Township, Allegan County, 15 miles west of Traverse lime production and 4 miles east of the Lake Michigan shore line. Operators tested a 5 to 10 bailer per day show early this week at 1320 feet in Upper Traverse lime and were undecided whether to acidize or continue drilling for a Monroe lime test, the original objective.

MacCallum & Herr's Story 1, Section 32-7n-12w, Walker Township, Kent County, was shut down at 1908 feet after logging a 60 to 90-foot oil show in Traverse lime. Top of Traverse was checked at 1872 feet.

At least two companies are running seismograph and geophysical crews in Southwestern Michigan, reportedly under contract to major companies.

Lansing, Mich.—The Michigan conservation department announced an offering of more than 12,000 acres of state-owned lands for October 7.

Location of the land follows:

Osceola County: Hartwick Township 2627 acres, Middle Branch Township 1284 acres, Cedar Township 1280 acres, Highland Township 820 acres, Marion Township 760 acres.

Roscommon County: Nester Township 3745 acres, Higgins Township 780 acres, Roscommon Township 640 acres, Richfield Township 640 acres.

Saginaw County: Richland Township 80 acres.

MICHIGAN
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegan County—		
American Dr. Co., Anderson 1, se se sw 32-1n-14w	*	1303
Smith Pet. Co., Kortering 1, sw sw sw 2-4n-15w	*	1499
Lima Oil Co., Gates 2, ne se ne 1-3n-14w	800	1493
Gordon Oil Co., Grohendie 1, nw sw ne 1-3n-14w	960	1487
Vanderkolk 1, se sw ne 21-4n-14w	*	1510
Muskegon Dev. Co., Scholten 2, sw ne nw 1-3n-14w	lcn	ab
Fortney Oil Co., Wesseling 4, sw nw ne 1-3n-14w	450	1482
K. G. Nilsen, Lampen 1, se ne se 3-3n-14w	*	1670
James Flanigan, Snoeink 1, sw nw nw 6-3n-13w	200	1498
Sprenger Bros., Brenner 1, sw se ne 10-3n-13w	lcn	ab
Heinig & Norton, Puschel 1, sw sw se 23-3n-13w	*	1780
Black Rock, Scholten 4, sw nw se 36-4n-14w	75	1480
John Northcott, Dowding 1, nw ne sw 27-4n-13w	*	1550
Clare County—		
McClanahan Oil Co., Perkins 1, ne ne ne 15-18n-6w	¶3	1490
Gulf, Ann Arbor 1, c w½ nw nw 2-18n-5w	¶1½	1557
Gladwin County—		
Sun, Bentley A2, nw sw sw 21-17n-2e	20	3541
Midland County—		
Sun, State B12, se nw se 27-16n-1w	460	3792
Montcalm County—		
L. T. Barber, Roose 1, c nw 22-12n-6w	¶1	1328
Roscommon County—		
Sun, Hanson 1, ne se ne 2-23n-2w	*	3515
St. Clair County—		
Black River Oil Co., May 2, sw se se 32-7n-17e	*	624
Van Buren County—		
J. W. McIntosh, Compton 1, se ne sw 9-1s-14w	*	1248
Norton Oil Co., Haven 1, se se nw 9-1s-14w	*	1281
Fisher & McCall, Wiggins 3, nw sw se 9-1s-14w	800	1243

*Failures; †Junked; ¶Million cu. ft. gas.

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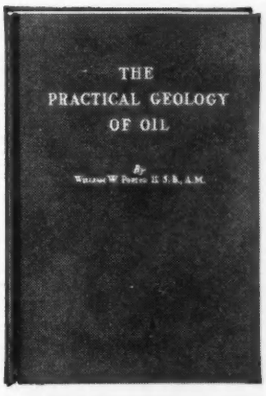

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Barbour—H. A. Stebbinger's Mrs. Alyce Robertson 1, 19-10-26, rur. **Choctaw**—Joe Modisett et al's McCorvey 1, se sw sw 20-9n-2w, owdd 7520 ft. **Greene**—R. T. Jeffrey et al's Lett 2, 3-20n-2e, sd 700 ft. **Lawrence**—Mid-Southern Pet. Co.'s Jacobs 1, sw se 11-7-7, ruct. **Mobile**—J. C. Prine's King 2, ne ne 4-1n-4w, sd 1120 ft.

ARKANSAS

Calhoun—Samuel S. Alexander's Smythe 1, c ne ne 7-11-14, dr 1850 ft. C. E. Murdock's Southern Kraft 1, nw nw 17-14-13, dr 2612 ft. **Columbia**—Petroleum Finance Co.'s Barnett 1, c nw se 14-17-20, mim. Standard of La.'s Tina Crumpler 1, 15-17-19, woc after trying new squeeze job, old td 7500 ft. E. D. Harris 1, 15-17-19, rur. Warren 2, 18-16-22, completed after acidizing wo gauge, td 7255 ft. G. H. Vaughn's Levi Garrett 1, c se se 14-17-20, dr 3325 ft. Tidewater & Seaboard's J. T. Beene 1, 15-18-19, dr 3655 ft. **Craighead**—Tenn-Ark Inc.'s Martin 1, 35-14n-3e, ruct, td 1754 ft. **Crittenden**—Stanley Oil Corp.'s D'Anner Hrs. 1, arr test, td 3351 ft. **Little River**—Barbere et al's Mills 1, se sw nw 18-12-29, rur. Clark et al's Strawn 1, sw se 20-10-32, woc 10-in csg 62 ft. **Lonoke**—J. F. Russell's Gunter 1, se se 17-5-10, sd 1650 ft. **Pulaski**—Coker Oil Corp.'s Stone 1, 36-3n-11w, sd 905 ft. A. L. Kitselman's Fee 2, se sw 2-1s-13w, sd 3389 ft.

CALIFORNIA

SOUTHERN CALIFORNIA

Los Angeles—Royal Land Co. No. 1, 8-4-17, co 1083 ft. D.H.B.'s Heath 1, 34-3-11, dr 4975 ft. John McKeon's Carmenita 1, 21-3-11, wocs 8350 ft. Continental's Newhall 1, 20-4-17, grading roads. British American's Pico 1, 12-2-12, dr 5225 ft. Tide Water Associated's Porter 1, 27-3-16, bailed 77 bbls gross 11 hrs and will deepen 4225 ft. Texas Co.'s Anderson-Spring 1, 9-2-15, lcn. R. T. Grady's Sepulveda 1, 23-5-14, foundation. Hogan Pet. Co.'s Burkhard 1, 7-5-13, dr 2225 ft. **Orange**—New Fields' No. 1, 16-5-11, rig. A. V. Oil Co.'s No. 1, 16-6-10, wocs 4634 ft. **San Bernardino**—Southern Counties' Los Serranos 1, 22-2-8, dr 1300 ft. **San Diego**—Dauphin Dev. Co.'s Irwin Kelly 1, 16-12-4, dr 485 ft.

SAN JOAQUIN VALLEY

Fresno—Holly Dev. Co.'s No. 1, 12-20-15, lcn. Petroleum Securities' 88-7F, 6-20-16, rur; No. 31-18F, 18-20-16, dr 1000 ft. Magnet's Fearon 2, 18-20-15, sd 4833 ft. Medford's F. C. Goetz 1, 10-20-15, dr 6439 ft. Shell's Coast Range 21, 17-19-15, dr 185 ft. Standard's No. 82-13-C, 13-20-15, dr 6430 ft. Stuart's Stuart 1, 12-21-14, sd 150 ft. Superior's Coalinga Fee 1, 7-20-16, rur; No. 2, 7-20-16, lcn. Texas Co.'s Mohawk 19, 12-20-15, sd 4424 ft. Tide Water Associated's Fleishacker 57-1, 1-19-15, dr so & g, 4846 ft; Guardian 66, 12-20-15, dr 5351 ft. Universal Consolidated's Leavitt-Hintze 1, 12-20-15, formation test showed no oil, little gas, preparing to test again 8108 ft. Pure's SPL Co. 1, 31-18-17, dr 12,243 ft. Dauphin Dev. Co.'s Ragan 1, 19-21-14, dr 2768 ft. Cyrus Pierce's Shorb 1, 16-14-12, dr shale 750 ft. **Kern**—Ohio's KCL A-8, 32-31-26, sd 11,186 ft; KCL F-1, 10-31-25, dr 7816 ft. California Land's Salisbury 1, 7-29-24, dr 4721 ft. Shell's KCL B-87-4, 4-30-25, dr 1270 ft. Gibson's Alferitz 3, 14-25-18, dr 1160 ft. G. E. Renner's R.H.L. 2, 27-30-30, dr 780 ft. Richfield's Tupman-Western 1, 32-30-25, dr 7975 ft. Texas Co.'s Camp-West-Lowe 1, 7-29-27, sdtr 10,122 ft. Continental's KCL B-2, 12-29-26, abn 9200 ft. Petrol's Reserve-Petrol 33-5, 33-11-19, dr 4940 ft. Hall-Baker's Reserve 33-2, 33-11-19, bailing 4615 ft. Richfield's KCL 1, 28-11-20, dr 6982 ft. Wilshire's Tejon 34-1, 34-11-19, rig. C. C. White's Armstrong 2, 9-26-26, rig. Desert Glow's No. 3, 14-27-27, rig. Framac's Brown 3, 22-27-27, co 1355 ft. Julius Freid's No. 1, 34-32-24, rur. General's St. Helen's 2, 12-28-20, lcn. Little & Gilstrap's Keating 1, 20-27-27, wocs 2046 ft. Dilamar Oil Co.'s Quinn 1, 15-25-27, pumping 10 bbls 2956 ft. Continental's KCL E-1, 17-30-26, redr 7350 ft. Richfield's Union Avenue 1, 6-30-28, dr 5770 ft. Continental's KCL A-3-8, 8-27-24, dr 13,377 ft; Seaboard-Associated-KCL C-1, 26-27-24, redr 12,661 ft, td 12,778 ft. Standard's Mushrush 1, 7-27-24, wocs 11,661 ft. KCL 8-B-1, 17-27-24, dr 12,900 ft. **Kings**—Tri-Counties' Olson 1, 10-23-22, sd 7769 ft. Caminol's A.O.G. 3, 29-24-24, dr 9300 ft.

COASTAL COUNTIES

Santa Barbara—Standard's Los Flores 1, 27-9-33, sd 6556 ft. Barnsdall's Pezzoni 1, 15-8-32, dr 3226 ft. Petrol's Magenheimer 5-11, 9-8-32, 480 bbls potential 4714 ft. J. E. O'Donnell's Helen 1, 8-7-33, dr 4634 ft. Continental's La Laguna 2, 25-8-31, rur. General's La Laguna 1, 6-7-30, rig. **San Luis Obispo**—G. E. Renner's R.H.L. 1, 7-32-22, lcn. Temblor Oil Co.'s Temblor 1, 22-31-21, to deepen 3045 ft. Loma Grande's Luis 1, 28-31-13, to set casing 1476 ft. Hancock's Scherer-Dickes 1, 30-12-33, testing 5593 ft. Charles R. McKinnis' Cosley 1, 14-4-19, wocs 965 ft. St. Louis' Williamson 1, 1-4-20, wocs 585 ft. Texas Co.'s Shiells 135, 4-3-19, test wet 3375 ft. Albatross Oil's Scheiferle 1, 17-3-20, rig. Clipper's Calco 1, 17-3-20, rig. Texas Co.'s Yale Richardson 5, 13-3-21, so & g 6702 ft. Section 20's No. 1, 20-5-19, dr 2259 ft. Hardison & Temple's No. 1, 22-4-21, wocs 656 ft. J. W. Martin's Arnett 1, 15-4-21, fsg 1230 ft. Stallings, Senter & Ahlburg's Stallings 1, 24-4-21, co 1445 ft. Ventura Drilling Co.'s Canet 1, 10-3-23, co 330 ft.

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

*—*dry hole abandoned well.*	owdd—*old well drilling deeper.*
‡—*salt water (completions).*	owpb—*old well plugging back.*
†—*junked and abandoned.*	pb—*plugged back or plugging back.*
¶—*million feet of gas.*	r—*reaming.*
abd—*abandoned.*	rog—*rig on the ground.*
bbls—*barrels.*	rur—*rigging up rotary tools.*
br—*building rig.*	rust—*rigging up standard tools.*
bs—*basic sediment.*	sd—*shut down.*
csg—*casing.*	sdtr—*sidetracking.*
co—*cleaning out.*	sg—*show gas.*
dd—*drilling deeper.*	si—*shut in.*
dk—*derrick.*	so—*show oil.*
dr—*drilling.*	so&g—*show oil and gas.*
fsg—*fishing.*	spd—*spudding.*
ft—*feet*	sr—*straight reaming.*
hfw—*hole full of water.*	sw—*salt water.*
in—*inches.*	td—*total depth.*
lcn—*location.*	ur—*underreaming.*
m—*milling.*	wih—*water in the hole.*
mim—*moving in materials.*	wo—*workover.*
mit—*moving in tools.*	wocs—*waiting on cement to set.*
mot—*milling on tools.*	wosr—*waiting on standard rig.*
n, s, e, w—*north, south, east, west.*	
oih—*oil in hole.*	

EXTREME NORTHERN

Colusa—Amerada's C.L.C. 1, 34-16-1, dr 7225 ft. **Glenn**—Ohio's Willard 2, 18-20-2, dr 1707 ft. **Humboldt**—Texas Co.'s Eureka 2, 22-3-1, rur to redrill 7708 ft. **Madera**—Barnhart-Morrow Cons.' Arnold 1, 22-10-17, dr 1300 ft. **Monterey**—Texas Co.'s Lewis 1, 1-19-5, dr 3297 ft. L. B. Tannehill's Quinn 1, 35-20-8, dr 566 ft. **San Mateo**—Wilshire's Cowell 2, 20-6-5, dr 300 ft. **Solano**—Richfield's Potrero Hills 1, 10-4-1, dr 4497 ft. **Stanislaus**—Orestimba Oil Co.'s Simon Newman 1, 12-7-7, dr 450 ft.

FLORIDA

Levy—Fla. Oil Disc. Co.'s Sholtz 2, sw sw ne 9-15s-13e, sd for csg 3986 ft. **Nassau**—St. Mary's River Oil Corp.'s Hilliard Turpentine Co. 1, nw nw se 19-4n-24e, pulled csg at 3935 ft, sr to reset csg, td 4510 ft. **Polk**—Edw. A. Hill's Polk Lbr. Co. 1, nw ne 32-25s-25e, dk. **Suwannee**—J. W. Phillips Oil Exploration's Shilkrett 1, nw nw 14-4s-14e, spd and sd. Wm. G. Blanchard's Lucy Cotton 1, se ne 35-3s-11e, sd 200 ft.

ILLINOIS

Bond—Cole et al's Williams 1, nwc se 6-4n-4w dr 500 ft; Elmor et al's Dilman 1, sw se sw 13-6n-2w, ur 8-inch 560 ft. **Champaign**—Sidney O. & G. Co.'s Wendling 1, sw se ne se 10-17n-10e, mim; Barber & Seiver's Lindsey 1, c nw se 20-20n-8e, sd 332 ft. **Clinton**—Watkins & Wright's Wise 1, ne nw nw se 24-1n-3w, ur 815 ft; Farreley et al's Berginan 1, nw sw nw 30-1n-3w, sd 723 ft; Sappington et al's Hilgemann 1, se ne nw 22-3n-3w, sd 1060 ft; M & K. Oil Co.'s Kesner 1, ne nw ne 10-3n-2w, dr 1300 ft. **Christian**—Swords & McDougall's Warren 1, nw se se 23-11n-1e, td 380 ft. **Coles**—Thompson Drlg. Co.'s Degler 1, sec ne 9-12n-7e, lcn. **Cumberland**—Natural Consumers' Harrison-Ward 1, ne se ne 17-9n-9e, sd 1725 ft; Stewart's Cable 1, nec 27-9n-9e, sd. **Edgar**—Mabee et al's Oakland Bank 1, nwc ne 31-14n-14w, sd 1130 ft; Lapsley's Roll 1, swc ne 17-14n-13w, sd 467 ft. **Edwards**—Leach Bros.' Lee 1, sw ne se 11-1s-10e, td 3435 ft. **Fayette**—Creek's Eckard 1, c nw ne 15-6n-1w, dr 200 ft; Putman et al's Farmer 1, c se se 35-6n-1w, dr 390 ft; Cole et al's Grider 1, ne sw sw 12-6n-3e, dr 900 ft; Wisenant et al's Rexwinkle 1, nl se ne 20-6n-3e, dr 1635 ft; Angle's Blubaker 1, swc nw 21-6n-3e, lcn; Ruwaldt & Johnson's Unknown 1, nw nw ne ne 28-7n-3e, sd 100 ft; Rockwood's Cooper 1, swc ne 9-8n-1e, dr 1000 ft; Hayes & Miller et al's Thull 1, c se sw se 14-8n-1e, td 1000 ft; Bemer et al's Wald 1, ne se ne 29-9n-1e, pits; Wisenant et al's Zanders 1, c sw se nw 36-9n-3e, td 1672 ft, shot with 40 quarts. **Jasper**—Kingwood-Burkan's Harrison 1, c w½ sw sw 2-7n-10e, rog. **Jefferson**—Jennings et al's Patton 1, nw ne sw 1-1s-1e, sd 1263 ft; Buell's Glick Real Estate 1, nec nw 5-3s-4e, digging rathole; Benedum-Trees Oil Co.'s Jeff O. & G. Co. 1, c nw ne 16-4s-2e, dr 2850 ft; Price & Parker's Hamilton 2-A, swc nw 20-4s-3e, sd 3150 ft. **Lawrence**—Hanke et al's Carrie 1, c se ne 21-2n-13w, mit; Rockstead's Ulrich 1, se sw ne 20-3n-13w, sd. **Macoupin**—Dillon et al's Keele 1, sec ne 32-10n-9w, machine on ground. **Madison**—Penn.-Ill.'s Poog 1, nw ne sw 12-4n-9w, dr 2020 ft; Spivey Drlg. Co.'s Storms 1, se sw ne 15-6n-8w, dr 1950 ft. **Marion**—Gray & Blalock's Welch 1, ne nec nw 2-1n-1e, td 900 ft, rust; Anna Bell Oil Co.'s Adams 1, ne sw ne 3-1n-1e, sd 1200 ft; Hansky's Yoos 1, nw ne ne 6-1n-1e, td 556 ft; Thompson Drlg. Co.'s Wright 1, c ne se ne 8-1n-1e, sd 2014 ft; Gardenshire's Wesner 1, sw ne se 12-1n-1e, td 1800 ft; Superior Oil Co.'s Luttrell 1, sw se se 4-1n-2e, dr 1750 ft; Boyce et al's Foster 1, c ne nw se 10-2n-1e, td 1340 ft, rur; Oil Roy's Suggs-Meeker 1, sw nw nw 11-2n-1e, ur 8-inch, td 1300 ft. **Massac**—Kahle et al's Harvick 1, swc 23-14s-3e, sd 3000 ft. **Menard**—Scroggin's Fee 1, c sw sw 24-19n-5w, fsg 1555 ft. **Montgomery**—Hammer's Jones 1, c nw¼ 22-7n-3w, sd 575 ft. **Morgan**—Alexander Oil Co.'s Gray 1, e½ nw ne 36-15n-9w, dr 175 ft. **Piatt**—Pray's Baker 1, sw ne ne 17-18n-6e, dr 2345 ft, hfw. **Randolph**—Cain et al's Smiley 1, sec nw 31-4s-5w, td 1002 ft; Arnes Drlg. Co.'s Nicholson 1, sw nw nw 15-5s-9w, dr 450 ft; Badger Oil Co.'s Schroeder 1, se nw nw 27-6s-6w, dr 500 ft. **Saline**—Carpenter et al's Sloan 1, sec sw 32-7s-6e sd 1590 ft; Flagherty & Waynesberg's Choisser 1, ne nw nw 5-8s-7e, dr 1025 ft. **Shelby**—Jolly's Jenkins 1, se sec 26-10n-4e, sd 1000 ft; Connell's Laeding 1, sec ne 30-11n-5e, td 1667 ft, hfw. **St. Clair**—Neil's Pfeffer 1, 90 ft. s of ne se ne 20-2n-6w, dr 1000 ft. **Washington**—Morris et al's Begulin 1, swc ne 12-1s-1w, dr 800 ft; Hull, Stoffer & Boughter's Williams 1, se sw se 7-2n-3w, dr 1575 ft; Bitterman's Bonk 1, c se ne sw 16-3s-2w, dr 1525 ft; Thompson Drlg. Co.'s Musial 1, se sw nw 19-3s-1w, sd 1364 ft; Adventure Oil Co.'s Keychi 1, sec nw 30-3s-1w, dr 1500 ft. **Wayne**—Moore's Moore 1, se ne nw 16-3s-5w, dr 1550 ft; Bruce's Holland 1, c s½ nw nw 5-3s-7e, dr 550 ft; Lake & Allen's Hazel 1, c ne nw 22-2n-9e, dr 1925 ft. **White**—Arab Pet. Corp.'s Doerner 1, sec 12-7s-8e, sd 3063 ft, woc. **Williamson**—Geo. Oil Syndicate's Scott 1, sw se sw 4-10s-2e, dr 1850 ft.

SALE OF OIL AND GAS LEASES—Department of the Interior, General Land Office, Washington, D. C. Notice is given that the following described lands and deposits of oil and gas therein contained are offered to the qualified bidder of the highest bonus per acre for leasing pursuant to section 17 of the leasing act of February 25, 1920 (41 Stat. 437), as amended by the act of August 21, 1935 (49 Stat. 674), at the royalty rate scale in the lease form shown in Circular 1386: Unit No. 1, the principal island, East Timbalier Island, known locally as Bird Island, located in fractional Secs. 34, 35, and 36, T. 23 S., R. 21 E., Secs. 2 and 3, T. 24 S., R. 21 E., and Sec. 31, T. 23 S., R. 22 E., Louisiana Meridian, situated on the Gulf Coast of La Fourche Parish, State of Louisiana, lying above the elevation of mean high tide, containing 295.77 acres, more or less. Unit No. 2, two islands, adjoining Unit No. 1 in a northeasterly direction between said principal island and Raccoon Pass, Island No. 1 located in fractional Sec. 31, and Island No. 2 located in fractional Sec. 32, both in T. 23 S., R. 22 E., Louisiana Meridian, situated on the Gulf Coast of La Fourche Parish, State of Louisiana, lying above the elevation of mean high tide, containing 11.69 and 69.29 acres, respectively, more or less. Sealed bids will be received in the office of the Secretary of the Interior up to 12:00 o'clock (noon), October 31, 1938. Bids must be submitted on each unit separately but both units, if awarded to the same bidder, may be included in a single lease. Each bidder must submit a certified or cashier's check or draft for 1/5 of the amount bid, payable to the order of the Secretary of the Interior, and furnish a showing of qualifications as required by section 7 of Circular 1386. The remaining 4/5, together with the annual rental at the rate of $1 per acre, must be paid by the successful bidder prior to the issuance of lease, and the deposits of other bidders will be returned. The envelopes should be marked plainly "Bid for Unit No.———(1 or 2), East Timbalier Area. Not to be opened before noon, October 31, 1938." The bidders are warned against violations of the provisions of Sec. 59 of the United States Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids in the discretion of the Secretary of the Interior. Protests by the State of Louisiana and others claiming under the State against the granting of Government leases for the group of islands on the ground that they are the property of the State were overruled by the Secretary of the Interior in a decision rendered July 29, 1938 (A. 21589), after an oral hearing at which the protestants were represented. The Secretary held that the United States has asserted ownership of and jurisdiction over East Timbalier Island for more than 100 years and that the group of islands are public lands of the United States. Commissioner, General Land Office.

KANSAS

Barton—Continental Oil Co. & Sinclair Prairie Oil Co.'s Pincher 1, se nw 23-16-11w, dr 900 ft; Carlock & Atlantic Refining Co.'s Demel 1, ne nw 30-17-13w, dr 2375 ft; Long & Johnson's Eveleigh 1, sw ne 3-18-14w, dr 1350 ft. **Butler**—Fred Phillip's Hanshaw 1, nec se 32-27-3e, co 1911 ft; Seidhoff & Blakesely's Eckel 1, sec 17-27-7e, rog; Solomon & Alexander's Sawyer 1, sw nw sw 2-28-7e, sd 175 ft. **Cowley**—Gralapp et al's Clark 1, nw ne 11-31-3e, dr 3125 ft; Henderson's King 1, ne 22-31-4e, mim; Barnsdall Oil Co.'s Elliott 1, ne 5-31-5e, ur 10-inch 2158 ft; Gralapp & Continental Oil Co.'s Community 1, nw 23-32-5e, sd 650 ft. **Ellsworth**—Continental Oil Co. et al's Gray 1, sw se se 26-17-13w, dr 2375 ft. **Geary**—Fowler & Tague et al's Aye 1, nw sw nw 10-12-8e sd 300 ft. **Graham**—Duwe & Farris & Atlantic's Parker 1, c se sw 29-6-23w, td 4097 ft. **Greenwood**—Dunlap's Warren Mortgage 1, nw sw 4-28-10e, dr 2025 ft. **Harvey**—Lanahan Drlg. Co.'s El Lagree 1, se se 4-23-3w, set 10-inch 280 ft. **Marion**—Johnson et al's Miltz 1, swc 24-17-4e, sd 2175 ft; Cox & McGinnis & Saco Oil Co.'s Jolliffe 1, c s½ sw se 2-22-5e, mit. **McPherson**—Western Kansas O. & R. Co. et al's Union 1, nw ne sw 18-17-8w, rog; Marylyn Oil Co.'s Dixon 1, nw ne nw 7-19-2w, ur 7-inch 2560 ft. **Ness**—Carlock & Shaffer's Smith 1, c sw se 11-17-25w, spd, sd. **Ottawa**—Babcock's Copeman 1, cnl s½ s½ se 7-10-2w, sd 2600 ft. **Pottawatomie**—Turner et al's Unshide 1, c ne nw 32-8-9e, dr 900 ft. **Pratt**—Champlin Refg. Co.'s Elliott 1, sw ne 26-27-14w, fsg 4857 ft. **Rice**—Murfin et al's Birzer 1, ne sw 21-19-11w, dr 500 ft; Watchorn O. & G. Co.'s Caldwell 1, ne se ne 29-20-9w, pb to 3235 ft; Glimax Oil Co. et al's Malone 1, se sw nw 36-20-10w, dr 1025 ft. **Rooks**—Shindheim & Haynes' Dorr 1, se sw 13-9-16w, pb to 3610 ft. **Russell**—Yankey & Stearnes' Krog 1, nw se nw 7-15-13w, br. **Sedgwick**—Crowe et al's Murphy 1, sw se 34-29-1w, run 12-inch 993 ft. **Stafford**—Atlantic Refg. Co. et al's Wise 1, nwc 13-24-14w, woc 4173 ft. **Sumner**—Cameron & Spencer Frey 1, nw 5-30-1e, sd 90 ft; Vickers Petroleum Co.'s Blue 1, cwl nw nw 1-33-2w, woc 550 ft. **Thomas**—Ramsey Pet. Co. & Mabee's Ryan 1 c ne se 27-8-16w, dr 4250 ft. **Woodson**—Fleming et al's Central Life 1, sw 27-24-15e, dr 1465 ft; Trott's Abbott 1, nw ne ne 21-25-14e, dr 1350 ft; Nathan et al's El Hassenpflug 1, nec 2-26-14e, lcn.

SOUTH LOUISIANA

Acadia—Atlantic's Klump 1, ne of Tepetate, 12-7s-2w, dr shale 8019 ft. **Avoyelles**—Magnolia's Bowden 1, Evergreen area, 7-2s-4e, dr shale 6389 ft. **Calcasieu**—Sun's Lutcher Moore 2, Luntia area, 12-8s-13w, dr shale 7168 ft. **Cameron**—Federal Royalty Co.'s State 1, Calcasieu Lake, 1-13s-9w, woc 1525 ft. Humble's Hanszen 2, Chalkley area, 9-12s-6w, dr shale 11,409 ft. Pure's Calcasieu National Bank 2, Lowery area, 18-12s-4w, abn 7989 ft. Union Sulphur's Miami Corp. 3, Willow Lake, 33-12s-8w, dr shale 9436 ft. **Iberia**—Texas Co.'s State 5, Fausse Point, 35-11s-8e, dk. **Jeff Davis**—Continental's J. Sturdivant 1, So. Roanoke, 36-10s-4w, testing 12,088 ft. **Lafourche** — Texas Co.'s La. Terre 1, Golden Meadows, 1-20s-21e, dr shale 10,700 ft; same operator's State Catfish Lake, Golden Meadows, 77-19s-21e, lcn. **Orleans**—W. T. Burton's State 1, Lake Ponchartrain, 10s-13e, woc 8025 ft; same operator's Faubourgde Monteluzin B-2, Lake Ponchartrain, 11s-13e, dr shale 6980 ft. **St. John The Baptiste**—Shell's Godchaux Sugars 1, La Place, 97-11s-7e, dr shale 10,310 ft. **St. Landry**—Herton's Thistlewaite Lbr. Co. 1, Beggs area, 60-4s-4e, dr shale 9069 ft. **St. Martin**—Texas Co.'s St. Martin Land Co. 11, Henderson, 21-8s-7e, in salt 9404 ft, pb to 7176 ft; same operator's State 6, Lake Mongouloui, 10-10s-9e, dr shale 9221 ft. Shell Petroleum Corp.'s Burdin 1, Lake Verrett area, 15-14s-12e, dr shale 6892 ft. **Terrebonne**—Shell's Peters 1, se of Houma, 73-18s-18e, dr shale 10,510 ft. Texas Company's Continental Land & Fur Co. 1, Lake De Cade area, 29-18s-14e, dr shale 7109 ft. **Vermilion**—DeSoto Oil Co.'s Richardson 1, e of Abbeville, 30-12s-4e, abn 7110 ft. Stanolind's Stovall 2, Intra-Coastal City block, 88-14s-3w, ru.

NORTH LOUISIANA

Bienville—Producers O&G Co.'s (Hall et al) Graves & Thomas 1, se sw se 23-15n-10w, woc surf cas. **Caddo**—F. W. Martin & Superior Oil Corp.'s Andrew Querbes 1, 37-17n-13w, 9⅝ in csg 4046 ft, reconditioning mud after gas blowout, td 5950 ft. R. E. Allison et al's Ellerbe 2, ne ne 28-18n-14w, base chalk 1750 ft, top anhydrite 4068 ft, dr 5490 ft shale and lime; State 1, se se 28-18n-14w, dr 3210 ft. J. Thomas Driscoll, Inc.'s Woolworth 1, 19-18n-14w, rur. R. L. Bauman's Slattery Est. 1, nw nw 35-18n-14w, blew out making gas at 2550 ft, killed, fsg, td 2550 ft. C. D. Loe et al's Lionel Meyer 1, se sw se 33-18n-14w, dr 700 ft. Oils, Inc.'s Cazaux 1, 10-16n-13w, hole clean, sd for heavier rig 3502 ft. Hollywood Oil Corp.'s C. & B. Realty Co. 1, c ne ne 22-17n-14w, dr 1840 ft. Hall & Smith's Fee 1, se se 5-17n-14w, lcn. Rodessa O&G Co.'s Chandler et al 1, 34-18n-14w, rur. J. Weil's Dreyfuss 1, 20-18n-14w, lcn; Woolworth 1, 20-18n-14w, lcn. R. O. Carter et al's Marks Meyer 1, 34-18-14w, lcn. J. T. Parks et al's Grayson 1, se se 30-19n-15w, mim. **Caldwell**—Oakes et al's Kyles 1, ne sw ne 18-11n-3e, sd 470 ft. **Catahoula**—Sibley-Sabine Oil Co.'s Peck 1, 36-10n-8e, sd 2020 ft. **Claiborne**—E. T. Oakes et al's Kilgore 2, nw se 28-21n-5w, rur. **De Soto**—Samuel S. Alexander's Stell A-1, ne ne 5-12n-16w, dr shale 2510 ft. A. L. Sutton et al's Frost Lbr. Co. 1, ne se 35-11n-15w, spd and sd. **Grant**—C. R. Bowers' Harrison 1, 21-8n-5w, dr 2442 ft shale and bldrs. **Madison**—Continental's Singer Mfg. Co. 1, c ne nw 3-15n-11e, elev 82 ft igneous rock 2227-2508 ft, top salt 4196 ft, dry and abn in salt, td 4345 ft. **Natchitoches**—J. E. Popkins' Peavy-Wilson Lbr. Co. 1, 36-7n-9w, sd 300 ft. **Red River**—J. M. Forgotson's Marston 1, 30-14n-10w, claim sg in Nacatosh, dr 1050 ft. **Sabine**—W. I. McClanahan's Frost Lbr. Co. 1, 22-9n-13w, acidized and testing at 1616 ft, old td 5709 ft. Le Grande et al's Tatum 1, nw ne 17-8n-13w, set csg at 1910 ft, woc. Tropical Oil Co.'s Long-Bell 1, 5-8n-13w, sd 3507 ft. Zwolle Synd.'s (Moffitt et al), Mansfield Hdw. Lbr. Co. 1, ne ne 8-7n-14w, acidized with 2500 gals after perf csg 3730-70 ft, testing, td 4325 ft. **Webster**—Magnolia's Pardee C-1, c nw ne 17-23n-11w, swabbed dry, 6025 ft, top Travis Peak 6054 ft, dr 7655 ft.

MISSISSIPPI

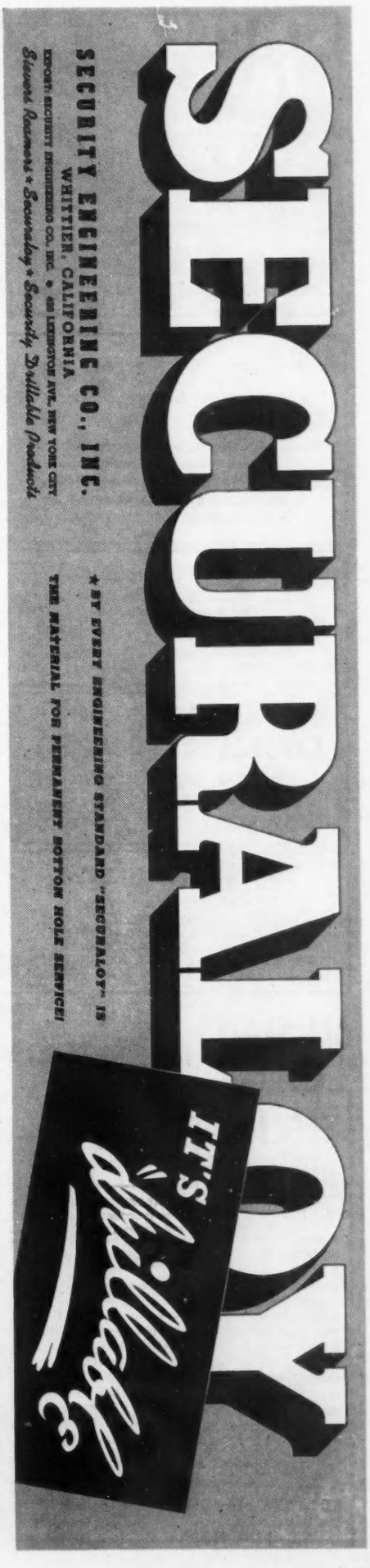
Claiborne—Claiborne County Dev. Co.'s Ruth Hayden 1, s½ se 55-11n-2e, rur to deepen, td 2950 ft. **Calhoun**—L. C. Lucas' E. C. Boland 1, sw sw 9-22n-9e, dr 692 ft gumbo. **George**—Ryan & Anderson's (was Cleve Love), J. J. Newman Lbr. Co. 2, c sw 9-1s-8w, top chalk 5481 ft, dr 6495 ft hd lime and shale. **Hinds**—Cleve Love et al's S. F. Johnson 1, ne se 29-6n-1w, rur to deepen 3707 ft. Southern Nat. Gas Co.'s Progressive Realty Co. 1, se sw 35-6n-4w, dr 6971 ft chalk. G. Jeffrey's Gaddis Farms 1, nw se 26-7n-4w, sd 3448 ft Wilcox. **Montgomery**—Dr. T. A. Chichester's Mitchell 1, se nw 30-20n-7e, dk. **Pontotoc**—Waldrop et al's Bray 1, se n½ sw 17-11s-1e, sd 288 ft. **Simpson**—Goodwill O&G Co.'s Perry 1, se sw 33-2n-4e, sd 2810 ft. Cleve Love et al's N. E. Garner 1, sw ne 1-10n-17w, spd and sd. **Yalabousha**—Acme Holding Co.'s S. D. Boyle 1, nw nw 33-25n-7e, dr 2742 ft, red gumbo. Chas. W. Crader's Jno. Bruce James 1, ne ne 24-11s-6w, rur. **Wilkinson**—La. Crusader Oil Co., Inc.'s Mississippi-Wisconsin L&T Co. 2, sw sw 35-4n-1w, rur.

MICHIGAN

Allegan—O'Brien's Raber 1, 36-2n-13w, sd 1550 ft. Varner & Chulski's Vander 1, 21-3n-12w, dr shale 550 ft. Leighton's Wiggins 1, 15-4n-11w, dr Antrim shale 1015 ft. O'Brien's Jewell 1, 15-1n-12w, rig. Leonard's Koning 1, 35-3n-16w, dr 600 ft, mud. **Arenac**—McHugh's Stevens 1, 8-19n-5e, dr 1635 ft. Bartlett's Clement 1, 6-18n-4e, rig. **Barry**—Collin's Simmons 1, 3-4n-10w, dr 1650 ft. **Bay**—American's Hecht 1, 10-15n-3e, dr 990 ft. **Calhoun**—Marcal's Wood 1, 13-2s-6w, rig. Verona Crude's Fruin 1, 29-1s-7w, sr 2075 ft. **Gladwin**—Bridger Basin's State 1, 29-19n-2e, lcn. Smith's Nash 1, 28-20n-2w, sd 1450 ft. Sun's Reid 1, 18-19n-2w, dr 925 ft. **Gratiot**—Chartier's Duflo 1, 6-9n-3w, dr 1310 ft. Michigan Chemical's Fee 9, 24-12n-3w, sd 4090 ft. **Huron**—Leonard's Milling Co. 1, 10-16n-15e, sd 3080 ft. **Isabella**—Keeler's Stevens 1, 13-16n-6w, dr 2100 ft. **Kent**—MacCallum & Herr's Story 1, 32-7n-12w, Traverse 1865 ft, so 1872-77 ft, sd 1891 ft. **Lake**—Joe Drury's Rice 1, 25-18n-12w, co 3300 ft. **Lapeer**—Hether's Foster 1, 26-9n-12e, Dundee 2140 ft, sd. **Mackinac**—Van Kuren's Hiawatha 2, 27-44n-9w, sd 610 ft. **Midland**—Andrews & Walter's Harris 1, sw sw sw 14-16n-1e, rig. Stork's Steger 1, 23-15n-2e, fsg 426 ft. **Missaukee**—Moser's Scherenheim 1, 36-23n-7w, sd 1415 ft. **Montcalm**—Rex's Cheney 1, 11-9n-5w, fsg 2650 ft. **Ogemaw**—Molloy's Morrison 1, 29-23n-3e, rig. Pure's State D1, 5-23n-2e, dr 2100 ft. Caldwell, Inc.'s State 9, 6-21n-3e, rig. **Osceola**—Fortney's Beall 1, 25-18n-9w, dr 131 ft. Champino's Ealy 1, 30-20n-8w, sd 720 ft. **Otsego**—Summer's Geraldine 1, 28-30n-3w, dr 900 ft. **Ottawa**—Sommerville's Bowman 1, 19-7n-14w, Traverse 1684 ft, sw 1692 ft, sd 1751 ft. **Shiawassee**—Buzard's McCall 1, 11-6n-3e, sd 1798 ft. **Van Buren**—Daily Crude Oil Co.'s Hall 1, se nw ne, 21-2s-13w, rig. Whitehill's Webster 1, 35-2s-16w, sd 1587 ft Gulf's Iodent 1, 25-4s-15w, sd 949 ft.

OKLAHOMA

Beckham—Wagnor & Stogner's McGee 1, nec se 25-8n-22w, sd 1028 ft, sg. **Caddo**—Texas Co.'s Smith 1, c ne nw 2-5n-12w, dr 1000 ft. **Cleveland**—Big Chief Drlg. Co. & Gulf's Strategier 1, nwc sw 25-9n-2w, dk. **Coal**—Carter et al's Mote 1, c e½ sw nw 19-2n-9e, coring 7091 ft. **Comanche**—Eldridge's Aetna Life 1, sw se sw 2-1n-10w, dr 1125 ft. **Garfield**—I.T.I.O.'s Kichin 1, c se se 17-22n-5w, dr 6700 ft. **Grady**—Carter et al's Smith 1, c se sw 25-5n-8w, dr 2495 ft. **Hughes**—Cooper Drlg. Co.'s Samuel 1, nw se ne 19-6n-8e, dr 3740 ft; Phillip's Moudler 1, se sw sw 1-6n-10e, mim; Doup et al's Bond 1, nec sw 7-7n-9e, dr 1950 ft. **Kay**—Hamilton's Riddle 1, nwc 3-26n-4e, dr 100 ft; Crawford et al's Boehl 1, sec nw 34-27n-2w, dr 550 ft; Atlantic's O. & R. Watson 1, sec nw 28-28n-1w, lcn; Tide Water's Hockman 1, nwc ne 19-28n-1e, rog; Blowser's Rudolph 1, nec sw 27-29n-1w, sd 3536 ft. **Kiowa**—Emerson's Handcock 1, sec ne 26-6n-15w, dr 500 ft. **Kingfisher**—Hollenback & Haley's Zerger 1, c se sw 5-18n-6e, sd 3085 ft. **Lincoln**—OK-Texas Co.'s Black 1, sec 31-16n-6e, lost circulation, td 3903 ft. **Logan**—Conti-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nental et al's Donahoe 1, nw sw 16-18n-2w, mit. **Muskogee**—Clant's Jennings 1, nwc ne 8-13n-19e, sd 1100 ft; Heydrick's Paschall 1, ne se nw 22-13n-19e, sg, sd 520 ft; Garrett's Fuel 1, swc 22-14n-18e, dr 100 ft. **McClain**—Villine's Pearson 1, se sw ne 13-5n-3e, rog. **Noble**—Hollenback et al's Mathews 1, c sw nw 9-20n-1e, dr 4835 ft. **Oklahoma**—McClennan et al's Rodesney 1, c w½ sw ne 27-11n-2w, rog. **Pawnee**—Kelly's Hill 1, swc se 1-21n-5e, dr 100 ft. **Pittsburg**—Supreme Oil Co.'s Hickey 1, nw sw nw 4-2n-15e, sd 643 ft; Supreme Oil Co.'s Stevenson 1, swc se 27-3n-14e, td 1300 ft; mit. **Pottawatomie**—Hall & Brisco's Merkle 1, nwc se 32-8n-5e, dr 3150 ft; Paceet et al's Riley 1, nec se 2-9n-3e, lost circulation 4930 ft; Summit Drlg. Co.'s Good 1, c w½ nw sw 4-11n-5e, coring 4922 ft. **Seminole**—Patterson's Konowa City Park 1, nw se nw 26-6n-5e, sd 2712 ft; Smith's Wolfe 1, nec sw 36-7n-5e, dk; Southern Oil Co.'s Van Meter 1, swc ne 7-7n-6e, rog; Rogers & Rogers' Robison 1, swc se 36-8n-7e, td 3138 ft, to shoot. **Stephens**—Mitchell et al's Westfall 1, sec 33-2n-4w, sd 100 ft. **Washita**—Continental Oil Co.'s Proctor 1, c nw¼ 28-10n-20w, dr 5975 ft.

WEST TEXAS

(This report is confined to the north portion of the Permian basin.)

Andrews—Fuhrman Pet. Corp.'s G. O. Ashton 1, c se se PSL sec 12, blk A-42, elev 3181 ft, top anhydrite 1640 ft, testing 4492 ft. Anderson-Prichard Oil Corp., Cowden Hrs. 1, Emma area, lcn. Broderick & Calvert-Geo. Livermore's O. B. Holt 1, c ne ne T&P sec 43, T-2-N, lcn. S. H. Forgeron-Olson Drlg. Co.'s Lockhart-Brown 1, c ne ne PSL sec 20, blk A-41, elev 3248 ft, salt series 1690-2720 ft, top brown lime 3995 ft, sul w 4913-81 ft, pb to 4770 ft, testing. Humble's University 1-G, c nw nw sec 18, blk 14, elev 3135 ft, top anhydrite 2120 ft, dr 4200 ft. Montecito Oil Corp.-Rhodes et al's E. Cowden-Sinco 2, near sw ne nw T&P sec 1, blk 44, T-2-N, elev 3170 ft, top anhydrite 1650 ft, used 5000 gals acid in pay 4176-4221 ft, flowed 608 bbls initial ¾-in choke; Cowden-Sinco 3, dr 1600 ft. Rogers & Rogers' University 1, near c e½ sw¼ sec 40, blk 9, top anhydrite 1750 ft, dr 3010 ft. Sinclair Prairie's E. Cowden 3, nwc ne T&P sec 1, blk 44, T-2-N, elev 3168 ft, top Yates 2730 ft, top brown lime 3780 ft, used 4000 gals acid 4168-4214 ft, flowed 1272 bbls initial. The Texas Co.'s University 1-H, nw ne sw sec 4, blk 14, elev 3165 ft, top anhydrite 1670 ft, dr 2750 ft. J. W. Tripplehorn et al's M. A. Thornberry 1, nec PSL sec 2, blk A-42, top anhydrite 1649 ft, dr 2990 ft. H. C. Wheeler et al's Farmers State Bank (Carlton)-Gulf 1, c se sw PSL sec 18, blk A-36, td 1405 ft, pb acct crooked hole to 805 ft, dr 1900 ft. **Cochran**—Magnolia's Della Wright 1, nec labor 7, league 96, Mills C.S.L. sur, elev 3784 ft, top brown lime 3650 ft, top solid lime 3980 ft, rust 4712 ft. The Texas Co.'s D. S. Wright 1, near swc labor 23, league 115, Potter C.S.L. sur, elev 3791 ft, top anhydrite 2285 ft, top brown lime 3670 ft, top solid lime 4000 ft, show oil 4880-4910 ft, sul w 4935-39 ft, pb to 4910 ft, shot 120 qts nitro 4880-4910 ft, used 2000 gals acid, tested little oil with water, dry and abd. **Dawson**—Ray Albaugh et al's D. Hogg 1, c se se T&P sec 17, blk 34, T-4-N, elev 2895 ft, top anhydrite 1550 ft, sd 4125 ft. **Gaines**—Atlantic Ref. Co.'s Parker Bros. 1, c se ne W. T. Ry. sec 264, blk G, elev 3348 ft, top anhydrite 2140 ft, trace gas 3315-35 ft, dr 3380 ft. Devonian Oil Co. et al (was R. C. Conkling, J. M. White et al's E. B. King 1, nec sec 6, league 305, Dawson C.S.L. sur, elev 3226 ft, top anhydrite 2510 ft, top salt 2550 ft, top Yates 3700 ft, dr 3985 ft. Magnolia & Atlantic's H. & J. Ranch 1, c sw sw W. T. Ry. sec 219, blk G, cellar. **Garza**—Gulf Oil Corp.'s S. P. Swenson Cattle Co. 1, c nw H&GN sec 25, blk 2, elev 2274 ft, trace oil 6277 ft, lime 7598 ft, r 9⅞-in hole. **Hockley**—Gulf's Mallett C&L Co. 2 swc labor 25, league 34, Concho C.S.L. sur, elev 3521 ft, top brown lime 3850 ft, top solid lime 4210 ft, top pay 4975 ft, sul w 5090 ft, pb to 5070 ft, shot 250 qts 4985-5060 ft, used 16,000 gals acid, swab 220 bbls 29.7 gravity oil and 1½ bbls water 24 hrs. Richardson Oils, Inc.'s Slaughter 2, labor 58, league 39, Maverick C.S.L. sur, elev 3551 ft, top Yates 2720 ft, top brown lime 3760 ft, top solid lime 4100 ft, top pay 4933 ft, pb fr sul w 4989 ft to 4980 ft to shoot. Snowden-McSweeney Co.'s Alex Slaughter 1, nwc lse, labor 74, league 35, Zavalla C.S.L. sur, top solid lime 4210 ft, rust, td 4950 ft. The Texas Co.'s Mallett L&C Co. 1-B, swc labor 1, league 52, Scurry C.S.L. sur, elev 3569 ft, top anhydrite 2290 ft, top Yates 2850 ft, dr 4270 ft; Bob Slaughter 3, nwc labor 66, league 39, Maverick C.S.L. sur, top anhydrite 2180 ft, top salt 2270 ft, top Yates 2770 ft, rust and dr plugs 4700 ft. **Kent**—B. Dolman et al's C. V. O'Keefe 1, ne ne nw H&GN sec 50, blk 1, sd 300 ft. Ray Dawson et al's Haggins 1, near c nw ne H&GN sec 118, blk 1, lcn. **Lynn**—J. L. Baldridge et al's Alamo Lumber Co. 1, ne sw sw HE&WT sec 151, elev 3267 ft, top anhydrite 2130 ft, top Yates 2900 ft, top San Andres 4170 ft, to run 5 3/16-in case, td 4450 ft. **Martin**—T. G. Shaw Oil Corp.'s H. N. Wilkinson 1, ne ne se sec 35, blk A, Bauer-Cockrell sur, sd 675 ft. **Yoakum**—Honolulu Oil Corp.'s R. M. Kendrick 1-M, sw ne sw sec 825, blk D, elev 3567 ft, top Yates 3070 ft, top brown lime 4040 ft, top solid lime 4510 ft, dr 4600 ft. Magnolia's J. H. Lynn 1, c se ne sec 770, blk D, elev 3644 ft, top anhydrite 2170 ft, top Yates 2967 ft, top brown lime 4040 ft, top solid lime 4500 ft, pay 5123-65 ft, shot 110 qts 5123-64 ft and used 9000 gals acid, flowed 312 bbls oil initial. H. K. Riddle-S. C. Yingling's N. Barrier-Gulf 1, c ne se sec 6, blk D, elev 3564 ft, top anhydrite 2640 ft, top Yates 3440 ft, trace oil stain 5240-60 ft, sd 5314 ft.

EAST TEXAS

Anderson—Roeser-Pendleton's V. W. Boyer 3 (200-ac), E. Ritter sur, Cayuga deep test, elev 317 ft, td 7682 ft, sidetracked at 5716 ft, cem 7-in cas 7470 ft, td in shale 7642 ft. **Cherokee**—Bunn Drlg. Co. et al's Boling 1, W. H. Walters sur, 2½ mi se Lone Star, elev 397 ft, Pecan chalk 3060-3374 ft, Austin chalk 3826-4005 ft, sand 4005-07½ ft, tested 2,500,000 ft gas with trace oil and water; C. Bounds 2 (95.9-ac), W. H. Walters sur, 2½ mi se Lone Star, elev 346 ft, cut fault 3535-45 ft, Austin chalk 3787-3969 ft, top Woodbine series 3969 ft, td 4085½ ft, testing. **Freestone**—G. Shyrock et al's M. S. Clark 1 (122-ac), M. De Cantona sur, 8 mi nw Teague, elev 521 ft, dr 4010 ft. **Gregg**—Humble & Gulf's P. Horton-Dickson 1, H. G. Hudson sur, 3 mi e of East Texas field, elev 275 ft, Pecan chalk 2261-2752 ft, Austin chalk 3308-33 ft, top Georgetown lime 3333-4107 ft, top anhydrite stringer 5596 ft, massive anhydrite 6180-6445 ft, cem case, td 7305 ft. **Henderson**—D. T. Davis et al's J. P. Tarkington 1 (39-ac), W. K. Newell sur, cem sur pipe. E. T. DeArman et al's Tarkington 1, W. K. Newell sur, elev 320 ft, Pecan chalk 1697-1759 ft, Austin chalk 2430-2810 ft, top Woodbine 3043-56 ft, testing. Peyton Bros. et al's W. W. Carter-Tarkington 2, W. K. Newell sur, elev 326 ft, rig. The Texas Co.'s J. P. Tarkington 1 (50-ac), W. K. Newell sur, elev 295 ft, Pecan chalk 1593-1830 ft, Austin chalk 2372-2838 ft, top Woodbine 2970 ft, sand 3016-25½ ft, tested oil and water, to pb. **Houston**—Humble's J. A. Hill 1 (161-ac), blk 4, J. L. Reviere sur, A-49, Navarro Crossing, Pecan chalk 4262-4370 ft, Austin chalk 5310-5575 ft, top Woodbine 5790 ft, broken pay 5800-30 ft, water sand 5954-78 ft, pb and perf at 5822-24 ft, tested 2,930,000 ft gas ¼-in choke; M. B. Hill 1 (160-ac), Reviere sur, dr 1000 ft. Sun Oil Co.'s Dailey Bros. 2 (1366.7-ac), J. G. Thompson sur, A-1021, lcn. J. G. Mayo et al's A. Warrock 1 (106-ac), J. Sheridan sur, 1½ mi e by s of Percilla, rig. **Kaufman**—Sam Knoerr et al's J. P. Hunter 1 (17-ac), P. Walker sur, 5 mi s Terrell, dk. W. G. Martin et al's Fee 2 (40-ac), W. F. C. Butler sur, 2½ mi ne Kemp, elev 428 ft, top Woodbine series 3079 ft, sand 3100-60 ft, dry and abd red shale 3549 ft. W. S. McGee et al's Pritchett 1 (15-ac), J. Hendricks sur, 7 mi w Mabank, Austin chalk 2092-2470 ft, top Woodbine 2294 ft, sd 3104 ft. J. F. McLaughlin et al's Wood-Nash 1, J. C. Cortez sur, ¾ mi se Scurry, elev 401 ft, dk. Tyler & Smith's Phoenix Realty Co. 2, dr 750 ft. **Lamar**—Dahl Bros. & Barr's Lewis-McCuiston 2 (10-ac), R. Russell sur, 1 mi ne Paris, elev 523 ft, sd 30 ft. **Leon**—Lone Star Gasoline Co.'s Steve Pate 1, D. J. Haskins sur, 8 mi se Buffalo, Pecan chalk 3952-4181 ft, Austin chalk 4988-5277 ft, top Woodbine series 5609 ft, broken gas pay 5631-76 ft, water sand 5748-82 ft, cem cas. T. J. Tucker et al's Sam Vane 1 (60-ac), Jas. Webb sur, 4½ mi se Keechi, rig. Wynne Drlg. Co.'s H. L. Brown-Sinclair 1 (43½-ac), Joseph Brown sur, ¾ mi nw Keechi, top Pecan chalk 3700 ft, top Austin chalk 5080 ft, dr 5910 ft. **Rains**—McKinley & Hastings' McTaggert 1 (21-ac), B. Miller sur, 1 mi w Emory, lcn. **Red River**—Bentley-Sheppard & Stevens' Southern Pine Lumber Co. 1, Geo. S. Parks sur, 17 mi n Clarksville, sd 71 ft. Daniels et al's J. J. Gaston 1 (657½-ac), J. Guest sur, 2 mi s Detroit, elev 468 ft, sd 1109 ft. Watters et al's J. Phamplin 1, Wm. Moore sur, 3 mi se Kanawha, elev 470 ft, Pecan chalk 78-85 ft, top Red Beds 450 ft, sd 730 ft. C. E. Whitehead et al's R. H. Ringwald 1 (56-ac), A. Moore sur, 1 mi nw Manchester, sd 630 ft. **Rusk**—Drake Drlg. Co.-T. L. Johnson's R. L. Needham 1 (136-ac), Jessie Chambers sur, 3 mi sw Lanesville, elev 319 ft, mim. **Smith**—Combest, Wadsworth & Cox's D. Kendall 1,

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Analyses of oil field brines, cores, gas, oil, and minerals. Field gas testing. R. H. Fash, Vice-President; Long distance 138. 828½ Monroe Street, Fort Worth, Texas.

John Williams sur, 1¼ mi se Jamestown, sd 3226 ft. **Van Zandt**—W. S. King et al's Edna Watson 1, M. G. Whitaker sur, 5 mi s Grand Saline, elev 489 ft, sd 2600 ft. F. A. Richardson et al's B. C. Dodd 1 (180-ac), T. W. Hutchinson sur, 2 mi s Grand Saline, elev 427 ft, sd 4050 ft.

SOUTH TEXAS

SAN ANTONIO DISTRICT

Atascosa — Stanley's Schumann 1, Malone sur, dr below 1400 ft. **Bastrop**—Teas' Grizzard 1, Graham league, cor below 7066 ft. **Bexar**—Blackburn's Miller 1, sur 324, testing 168 ft. **Caldwell**—Nytex' Bridges 1, Floyd sur, sd 1250 ft. **Caldwell**—Tinkle's Blackwell 2, Roe sur, fsg 2320 ft. **Frio**—Humble's Schley 1, sur 174, prep to pb to a/c, td 5304 ft. Smith's Berry 1, sur 1, ru. **Guadalupe**—Hamill & Hamill's Zuehl 1, Duran sur, dr below 500 ft. Huener's Bauer 1, Brown sur, lcn. King's Rosenbrock 1-A, Duran sur, dr below 1110 ft to Ed. li. Marosis' Maierhofer 3, Peters sur, mim. Marts & Beaven's Glenwinkle 1, Wakefield & Stewart sur, dr 1700 ft. Williams' Weber 1, Torres sur, dr 1300 ft, last rept. **Kendall**—Carpenter's Seidensticker 1, sur 257, ru cable tools to dd, td 210 ft. Millican & Norman's Werner 1, sur 781, dr 970 ft. Reed's Marquart 1, Traviesso sur, dr below 700 ft. **Kimble**—Plateau's Bolt 1, sur 42, testing oil show 1420-35 ft, td 1675 ft; Davis 1, sur 44, dr 215 ft; Hunger 1, sur 43, still fsh 1600 ft, likely will abn. **Lee**—Pederson's Brown 1, Hudson sur, dr 4850 ft. **Maverick**—Humble & Wellington's Indio 1, Rivas gr, dr 350 ft. Lockhart's Asbrook 1, sur 83, dr 3450 ft. **Medina**—Felty's Schweers 1, Bryan sur, testing 586-96 ft. Gaston's Rogers 1, Wilson sur, dr plugs, testing, td around 759 ft. Whitfield & Draper's Ulbrich 1, Hoffman sur 204, set sur csg. **Travis**—Wolter's Johnson 2, Burleson sur, dr 350 ft. **Williamson**—Anderson's Teichelman 1, Jett sur, fsg 2471 ft, last rept. **Wilson**—Stapper's McDaniel 1, Manchaca sur, prep dd, td 2008 ft.

CORPUS CHRISTI DISTRICT

Aransas—Housh' Kent-Crane 1, Hollis sur, dr below 3000 ft. **Bee**—Aid's Hall 2, Kerr sur, sp. Chapman Minerals' Mohle 1, tentative lcn 2½ mi w Beeville. Mayo, Bunn & Chapman's Sparkman 1, Walker sur, sp. Pettus' Ray 1, Mangum sur, cor below 3000 ft. **Calhoun**—Hiawatha's Roem 2, Ogsberry sur, dr 7950 ft. **Goliad County** — Steinberger's Alberecht 1, Hancock sur, dr below 1100 ft. Sun's Shaper 1, Payne sur, dr 7150 ft. **Hidalgo**—Harding's Card 1, Hidalgo Canal Co. subd, dr 6350 ft. Harding-Pantana's Woody 1, por 69, sd 7214 ft. Phillips' Flores 1, por 39, dr 8447 ft, last rept. Smith's Fairbanks & Young 1, por 46, woo, 2550 ft. Wheelock & Collins' Temple 1, Llano Grande & La Blanca gr, dr 7300 ft. **Jackson**—Chapman Minerals, Bennett 1, Garcia sur, lcn. Texas' Weed 1, Newell sur, dr below sur csg. **Jim Wells**—Collom's Adams 1, T&NO sur, dr 3100 ft last rept. Coker's Albert 1, La Vaca gr, lcn. Humble's Belitz 1, sur 202, cor below 4200 ft. Magnolia's Garcia 1, La Anima Sola gr, dr 7150 ft; Moreno 1, La Trinidad gr, mim. Presnall & Tsesmelis' Hoffman 1, Los Presenas gr, dr 1000 ft. Reese & Dunn's Stillwell 1, Collins subd, testing 5363 ft. Transwestern's Dunlap 1, sur 181, dr 4800 ft in sdtr hole, otd 5107 ft. **Karnes**—Arnott's Steed 1, Burns sur, sd repairs around 3525 ft. **Kleberg**—Pure's State 1, tr 522, pb 8270 ft to sdtr, otd 9350 ft. **Lavaca**—Midway's Graff 2, Jack sur, dk. Navarro & Bunte's Brom 1, Strode sur, lcn. **Live Oak**—Adair's Schultz 1, sur 134, dr below 1450 ft. Gaines' Great Southern 2, Buchanan sur, dr below 500 ft. Gravis' Minnetex 1, sur 132, dr 3100 ft. Holland's Geo. West 2, sur 256, dr below 3525 ft. Schwab's Terrell 1, Henry sur, mim. Turner's Federal 1, Turner sur, dr 600 ft. Wallace & Jones' Burrows 1, sur 138, dr 2700 ft. Wellington's Sanger 1, sec 349, dr 2850 ft. **Nueces**—Phillips' Mastin 1, sec 146, sd 3529 ft. Texas' Little 1, Little sur, cor below 4710 ft. **Refugio**—Austin & Heard's Hunsdon 1, Lopez sur, ru. **San Patricio**—Grote's Carlock 1, McCampbell Ranch subd, ru. Illinois' Wilson 1, Morris sur, cor 5350 ft.

LAREDO DISTRICT

Duval—Cosner's Garcia 1, sec 409, dr 2800 ft. Hiawatha's Southland 11, Santos Flores gr, cor below 5990 ft, last rept. Magnolia's Duval 1, sec 267, dr 2400 ft. Morden & Starnes' Isenhower 3, TE&L sur, lcn. Pearl's Smith-Corkill 1, sur 491, cor 2700 ft. Smith & Story & Gier's Peters 1, sur 175, dr 1350 ft. Stewart & Nye's Welder 1, sur 213, testing 1557 ft. Thompson's Parr 1, sur 118, dr 760 ft. **Jim Hogg**—Humble's Bass 3, San Rafael gr, ru. **La Salle**—Garner & Dovre & Brown's Yeager 3, sur 37, dr 600 ft. Lake-Tobian's O'Connor 1, Emory sur 988, laying wtr line. **McMullen**—Argo Oil Corp., H. C. Edrington 1, sur 57, lcn. Barbara Oil Co., W. E. Edrington 1, sur 79, ru. Mills Bennett, Nueces Land and Livestock C-1, sec 90, top Mirando 1233 ft, drlg ahead, will abn around 1350 ft. Cosner and Smith, Nueces Land and Livestock 1, sec 177, crg below 1150 ft. Crown and Strum, Smith and Leuschner 1, A. Sumwalt sur, lcn. Harry Ezzell, Fee 22, sec 35, td 1534 ft, tested through perf 1527-34 ft, did not show for producer, plug back and perf 1506-19 ft, est 400 barrels per day. Kirby, Chylek 1, Hernandez sur, td 1210 ft, moving in dr stem to dd. Scarborough and Biglane, Matulla 1, H. Garner sur, spud. Schumway and Burns, Shiner Ranch 2, Grist sur No. 4, lcn. Spice, Edrington 1, sur 57, td 2519 ft, flowing about 3 barrels day, fluid, some oil, wash wtr and mud. **Starr**—Circle, Olivares 1, sur 241, drlg below 475 ft. Giblin, Guerra 1, proc. 69, dr below 20 ft. Graham Oil Co., Gutierrez 1, Juris of Carmargo, td 2987 ft, prep production tests of sand 2915-27 ft and 2600 ft. Hall, Margo 1, proc. 70, dr 200 ft. Harvey and Henderson, Salinas 1, Sacatosa grant, dr 1138 ft. Magnolia, Fee-Guerra 1, Farias grant, td 5942 ft, ran test with packer set at 5928 ft in 14 min, 230 lbs. pres, ¼ in ch, rec 390 ft mud with distillate odor, top sand 5929 ft. Sun Oil, Olivares 1, sec 239, set sur csg 1050 ft. Sun Oil Co., Speer 1, sec 274, ru. **Webb**—Killam, Bruni Estate 1, Albercas grant, set sur csg. Mac-Bill Oil Co., Trafton 1, sur 281, sp and set sur csg. Superior Oil Corp., Spain 1, CCSD&RGNG sur, dr 1000 ft. **Zapata**—Thompson, Ramirez 1, porc. 18, dr 750 ft.

TEXAS GULF COAST

Brazoria—General Crude's Campbell 1, se flank of West Columbia, J. H. Bell sur, dr shale 1789 ft. Sterling's Kramer 1, flank test at Stratton Ridge, T. W. Grayson sur, testing 4452 ft. **Chambers**—Salt Dome's Ogden 1, s of Anahuac, E. Douthitt sur, dr shale 6102 ft. F. A. Gillispie's Kirby Pet. Co. 1, w of Cotton Lake, woc 6523 ft. **Galveston**—Midwest Royalty Corp.'s L. Lobit 1, League City area, Perry & Austin sur, dr shale 6530 ft. **Harris**—Continental's Sweeney Estate 1, Ogburn sur, W. C. R. R. sur, woc 1059 ft. **Jefferson**—Geo. H. Echols et al's American National Bank 1, Lovell Lake area, J. J. French sur, abn 8515 ft. **Matagorda**—Maja Oil Co.'s Ribbins 1, e of Palacios, A. Sheppard sur, mim. **Montgomery**—C. G. K. M. Oil Co.'s Floyd Oil Co. 1, sw of New Caney, W. C. R. R. sec 11, dr shale 2987 ft. Deep South Pet. Co.'s Foster Lbr. Co. 1, ne of New Caney, Pryor Bryan sur, dr shale 5960 ft. Frasier & Bunte's Chase National Bank 1, sw of Conroe, D. Garrett sur, dr shale 5276 ft. Mills Bennett's Llewellyn & Foster 1, sw of Conroe, A. Hodge sur, dr shale 1420 ft. **Orange**—Sun's Lutcher Moore 1, n of Orange, B. Johnston sur, dr shale and lime 7043 ft. **Wharton**—Western Gulf's Rust 1, nw of Wharton, A. Jackson sur, dr shale 6038 ft.

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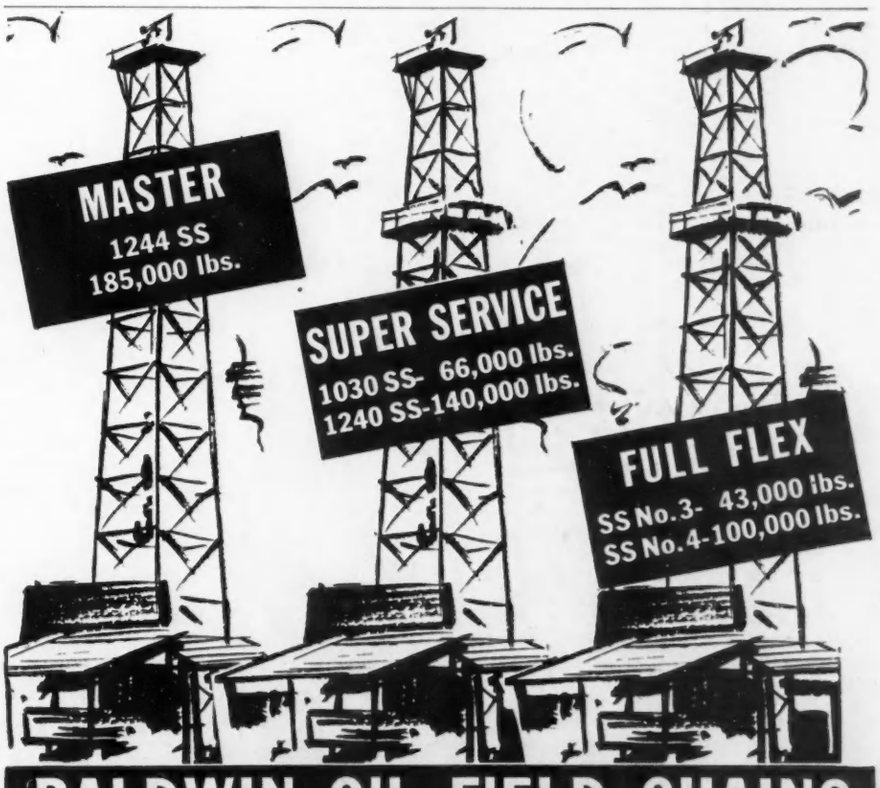

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a chain for every type of well
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NEW PRODUCTS FOR THE FIELD
Machinery • Tools • Equipment

HIGH-PRESSURE MANOMETER
Daniel Orifice Fitting Company

Wilcox Manometer

Daniel Orifice Fitting Company, Dept. 116-K, 3352 Union Pacific Avenue, Los Angeles, California, is introducing a new straight-tube high-pressure manometer.

The design of this new Wilcox Manometer, Patent No. 2,088,777, permits the use of straight tubes which are sealed positively against leakage by synthetic rubber sleeves, thus eliminating strain or stresses in the glass. The construction does away with stuffing boxes and provides a compensating seal under pressure.

Because there is no U-Bend and only the lightest contact between glass and metal parts, there is no distortion of the tubes when seal is made. Every part is easily accessible, impervious to gas, oil, gasoline, etc., and easily cleaned. If glass is accidentally broken, only one side need be replaced.

WIRE LINE GUN
M. M. Kinley Company

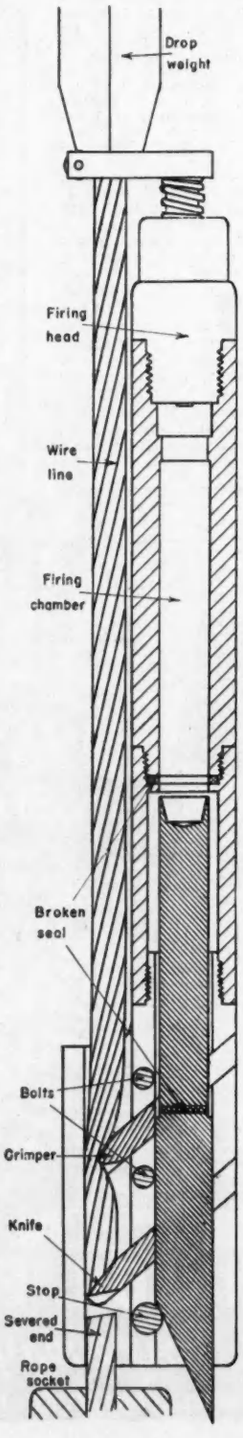
M. M. Kinley Company, 301 Adams Street, Houston, Texas, has perfected a new wire line cutting tool which uses an explosive as power for its operation, and is fittingly called a wire line gun.

Outstanding points in its operation are that no special line for lowering the gun to operating position is required, and that the gun is positive in operation. The lower part of the gun, containing a crimper blade and cutting knife, is built in two sections, bolted together. A guide roller at top of gun insures travel of gun down the line.

In assembling the gun to operating position, the bolts in lower part are removed and the two halves re-assembled around the line to be cut. The gun is then released for descent to rope socket or bail where it is desired to sever the line. A drop weight, also built in two sections, is then assembled around the line and released. When this weight contacts the top of the gun the explosive is fired.

By means of power generated by the explosive a plunger wedge is driven down through the body of the gun. This wedge in turn actuates the crimper blade, firmly attaching the gun to the wire rope. An additional travel of this wedge drives the cutting knife into operating position and the wire rope is cleanly severed. The crimper blade, having taken a firm hold on the wire rope above the point at which the line was cut, the entire gun and drop weight are carried to the surface on the cut wire line.

This appliance is available on rental charge basis or outright sale.



150-AMPERE D-C ARC WELDER
General Electric Company

A new 150-ampere, direct-current, single-operator arc-welding equipment has been announced by General Electric Company which further extends its line into the field of light-gage work. The new equipment, because of its high, instantaneous recovery of voltage, prevents arc pop-outs at all points in its wide welding range with any good bare, lightly coated, or heavily coated electrode. Its stability prevents excessive current surges, thus avoiding excessive spatter loss and sticking of the electrode.

Any welding current within its entire range can be quickly obtained by means of a three-point selector switch and an easily operated dial for intermediate adjustment. Additional assurance of dependable operation is provided by a reliable means of self-excitation. Isothermic overload protection permits the equipment to carry maximum safe overloads without danger of burnouts and without unnecessary interruptions on harmless overloads.

The new d-c equipment is rated 150 amperes at 25 volts and its range of adjustments varies from 20 to 200 amperes at 25 volts.

PORTABLE CORE DRILL
Sullivan Machinery Company

Sullivan Machinery Company, Michigan City, Indiana, has recently perfected a new motorized oil field core drill for structure testing, drilling for electrical logging holes and for shallow slim hole production. Known as No. 41, this drill features an Automatic Chuck, a hydraulic feed and rotary table so arranged that drill rods can be used with or without a kelly as desired and so that hydraulic feed can be applied to kelly as well as rods.

No. 41 is a complete drill consisting of multiple speed reversible rotary table with hydraulic feed and Automatic Chuck; heavy-duty multiple speed; planetary gas-driven draw works, multiple-speed cathead, and pump; closed hydraulic-pressure system; hydraulically elevated and lowered derrick; adequate power drive from either single or dual engines or from truck engine through power take-off; all assembled on a single rigid frame.

The entire assembly can be mounted on any suitable motor-truck trailer, semi-trailer, crawler tractor, crawler wagon, or on skids.

SLUSH PUMP VALVE
Midco Tool & Supply Company

Midco Tool & Supply Company, Oklahoma City, Oklahoma, has recently introduced a new slush pump valve which has been thoroughly field tested for several years. It is a self-contained mud pump valve, embodying several unique and practical features.

Compact and having but a few parts, the valve is light in weight yet rugged in construction. The curved seat face is designed to reduce the cutting action of fluid and assures longer service from the valve. The valve can be thoroughly renewed by replaceable impact washers, assembly requiring only a few moments' time without the use of any special tools. There is a uniform opening of all valves, which is controlled by a sleeve nut. This is claimed to eliminate valve cap guide wear and permit smoother operation of pump.

ENGINE DRIVEN WELDER
Westinghouse Electric & Manufacturing Company

A new welding unit for field and rural service where power supply is not available has been designed by Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pennsylvania.

This FlexArc Model SFA 200-ampere gas-engine-driven welder is completely equipped with governor, hydraulic idling device, current indicator, polarity reversing switch, oil filter and is equipped for battery starting. It is notable for its lighter weight and compact size. No meters, rheo-

Where fishing for "suckers" is no fun

SNAP goes a sucker rod! Then hours, perhaps days, of fishing for the broken string! Then still more time wasted in pulling, repairing and replacing the string! . . . All representing production and other shut-down losses usually amounting to many times the slight extra cost of better rods!

Because of their uniform toughness, and their resistance to corrosion, Nickel-Moly (S. A. E. 4620) steel sucker rods withstand sour well conditions over remarkably long periods. The proof is in the records they are making.

Sucker rods, sucker-rod couplings, tool joints, drill bits—in these and many other items of equipment Moly steels are cutting costs and increasing efficiency throughout the oil fields. Our book, *"Molybdenum in Steel,"* contains much practical data. Sent free on request. Climax Molybdenum Co., 500 Fifth Ave., New York.

PRODUCERS OF FERRO-MOLYBDENUM, CALCIUM MOLYBDATE AND MOLYBDENUM TRIOXIDE

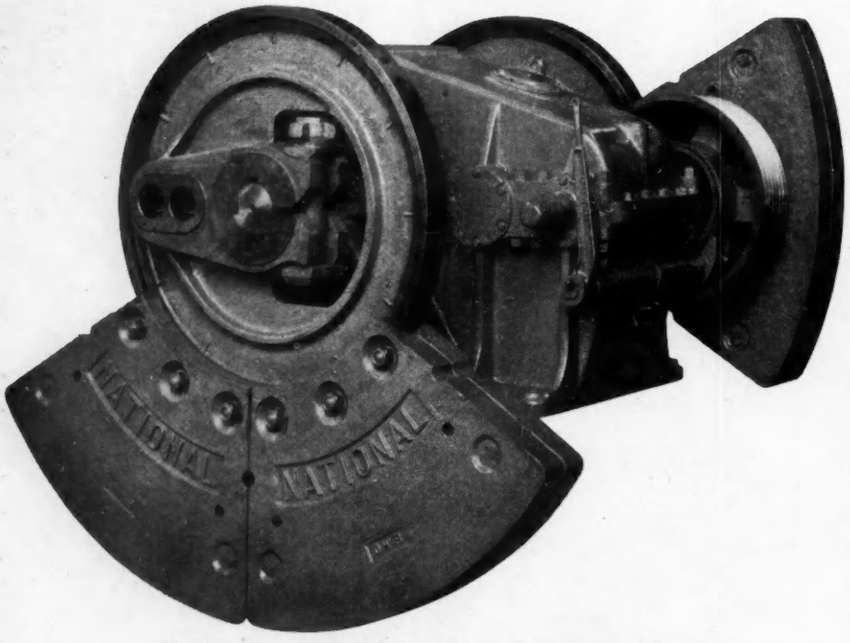
MOLY

Climax Mo-lyb-den-um Company

stats, reactors or other gadgets which require frequent maintenance are used.

This welding generator varies the current output by means of a magnetic shunt in the armature reaction flux path. The current output adjustment is mechanical. A handwheel on the side of the generator is turned for adjustment to any desired current setting which is easily and clearly read on a calibrated dial mounted behind a glass window inside the generator frame.

The power unit, a model T50 Chrysler Industrial Engine, is exceptionally reliable and economic. Its fuel consumption is only 2 gallons per hour when the set is operated continuously on a 200-ampere load. A down-draft carburetor provides power with greatest economy under varying load conditions. Four main bearings insure permanent crankshaft alignment and eliminates vibration. Ample cooling capacity is provided by a sturdy radiator of standard construction,



National concentric disc crank and counterweight.

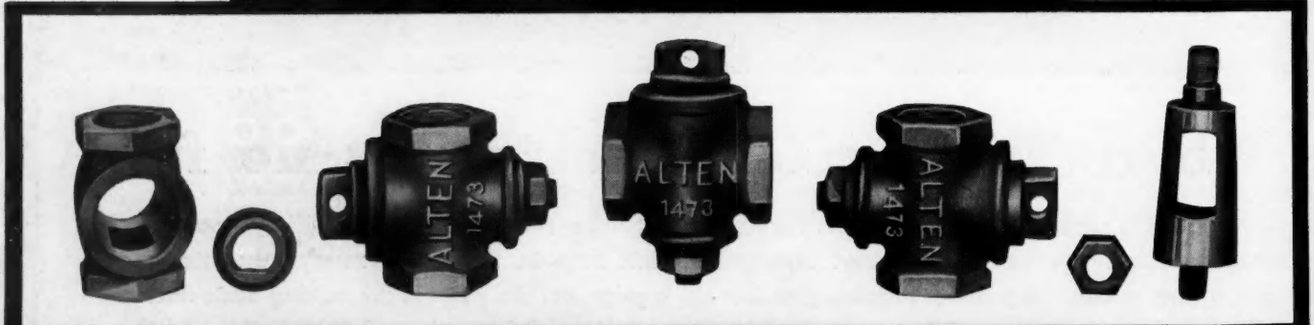
DISC CRANKS

The National Supply Company

The National Supply Company, Toledo, Ohio, has recently developed concentric disc cranks and counterweights, primarily designed for successful counterbalancing on back crank installations. The counterweights travel around an endless circular track on the crank, giving the very maximum in accuracy of counterweight effect and degree of lag and lead. Moreover, adjustment is made by the power of the prime mover. There is no adding to or subtracting of weights, nor can they slide off. One man can do the work quickly and easily.

The concentric disc crank is made with a split hub of special design, which is tightened over the key on the reduction gear by a large bolt. Three keyways are provided in the crank spaced 90 degrees apart so that proper crank position can be obtained irrespective of direction of wells from the gear. Wrist pin holes are tapered to insure tightness of the pin, and keyseats prevent the pin from turning. The nut is held in place by a locking device. The counterweights are identical with those used on eccentric disc cranks. Any number of counterweights from one to three can be used on each crank. In addition, each size of crank has several optional sizes of counterweights.

You can always rely on
ALTEN'S STOP COCKS



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This Week with the Industry's EQUIPMENT SUPPLIERS

Raleigh Hortenstine Heads Wyatt Metal & Boiler Works

Wyatt Metal & Boiler Works, Houston and Dallas, Texas, announces the election recently of Raleigh Hortenstine as president, following the death of W. J. Wyatt, founder of the company and president at the time of his death.

RALEIGH HORTENSTINE
President, Wyatt Metal & Boiler Works

Since 1923, Hortenstine has been vice president and general manager and a director of the company. Prior to his joining Wyatt Metal & Boiler Works he gained much experience in the manufacturing and construction business, beginning with Penn Bridge Company as designing and construction engineer, during which he was located in Pennsylvania, Washington, Louisiana and Texas. For a time he served Virginia Bridge & Iron Company as contracting engineer in charge of work in the Southwest and as plant manager at Memphis, Tennessee. He came to the Wyatt organization in an executive capacity in 1923.

Born in Washington County, Virginia, Hortenstine was graduated from Virginia Polytechnic Institute with the degree of bachelor of science in civil engineering, and did a year's graduate work in the College of Civil Engineering at Cornell University. He is a member of the American Society of Civil Engineers.

H. John Eastman Returns From European Trip

H. John Eastman, president of Eastman Oil Well Survey Company, returned to the United States, September 10, from his annual European trip. Eastman has an oil-well surveying and directional drilling business in Roumania, with his headquarters at Ploesti. This Roumanian business is in charge of J. E. Treacy.

Eastman reports that conditions are considerably improved in Roumania and that if war is averted they should have a good year.

While abroad he called on the oil companies in London and the Hague. He also visited Germany, Austria, Hungary and Czechoslovakia.

Foreign Sales Representative Expands Activities

Val Wittich, New York, and foreign sales representative for Clark Bros. Company of Olean, New York, S. R. Bowen Company of Huntington Beach, California, Portable Rig Company, Inc., Emsco Screen Pipe Company and Oil Center Tool Company, all of Houston, Texas, has recently enlarged his organization maintained at 30 Rockefeller, Plaza, New York, to more effectively handle the expanding business of his group of companies. Fred J. Jobst, who for a number of years has been associated with equipment companies since completing his mechanical engineering course at Stevens Institute, will be delegated to handle general engineering problems pertaining to oil field and refinery equipment and assist Wittich in the general conduct of his representations. Robert R. McCartney, who also has had much experience in petroleum engineering since completing his mechanical engineering course at Pratt Institute, will specialize in engine and compressor equipment manufactured by Clark Bros. Company and assist in handling the foreign business enjoyed by Clark Bros. Company. In addition to the enlargement of Wittich's New York office, he has recently established field representation in several South American countries. W. C. Lance, formerly of California and who has had several years' experience in drilling and producing departments of the important oil companies, will cover the oil fields in Venezuela, Colombia, and Trinidad.

Line Scale Company Representative in Illinois

J. C. Conrad, president of Line Scale Company, Oklahoma City, has just returned from a trip to Illinois and Kentucky with P. Z. Conrad, who was recently appointed to service the Illinois-Kentucky area for the company.

P. Z. Conrad, who will go to Illinois to take charge of his new duties, was transferred from the West Texas area where he has had headquarters at Odessa.

Continental Orders Clark Compressors for New Plant

The Continental Oil Company of California has ordered two 300 horsepower Clark "Angle" compressors for use in its new repressuring plant which is being constucted in the Belridge field. The order was placed with Smith Booth Usher Company of Los Angeles, Pacific Coast agents for Clark Brothers Company.

Walter Ruska & Company Occupies New Quarters

Walter Ruska & Company, Houston, recently announced removal from 6512 Westchester to a new laboratory and plant at 2332 Bellaire Boulevard.

The plant is modernistic hollow tile and concrete construction. It is equipped with modern machinery for

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Made in 3, 5, 8, 10, and
20 gallon sizes.
GOTT Water Coolers are the convenient way to keep drinking water handy to the worker, protect it from impurities. Their exclusive construction keeps water cool for long periods. Snug fitting large removable top, handy non-leaking push button faucet. GOTT Water Cans for handy field use. Your Supply Store has them, get one today! . . . .
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Made in 1½, 3, 5, and
10 gallon sizes
H. P. GOTT MFG. CO.
WINFIELD, KANSAS
KEEP PURE DRINKING WATER ALWAYS HANDY

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One of the largest oil producers in the World reports the drilling of six 7000-foot wells with a Patterson-Ballagh Wire Line Guide without requiring replacement of the rubber refill.

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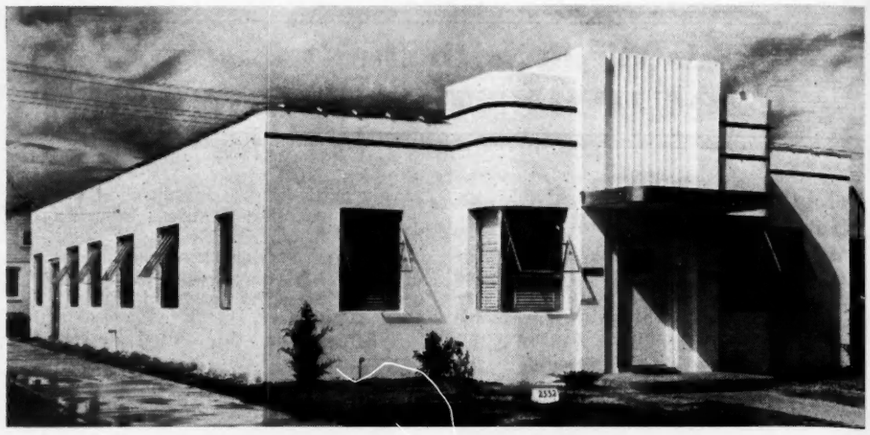

New Laboratory and Plant of Walter Ruska & Company

experimental work and production to meet all needs of instrument work, all necessary tools for precision work, and measuring equipment for testing and adjusting precision instruments are available.

Bower Enters Industrial and Service Field Through Ahlberg

A new entry into the industrial roller bearing field has just been announced with the appointment of Ahlberg Bearing Company as nation wide distributor for the products of Bower Roller Bearing Company of Detroit. While Bower Roller Bearing Company has been a large manufacturer of roller bearings for almost a quarter of a century its sales in the past have been almost entirely confined to the automotive industry.

Distribution of the Bower line is to be made in the industrial field through Ahlberg Bearing Company which will continue to be a source of supply for RBC roller bearings, Norma-Hoffman ball bearings, CJB Master ball bearings and Ahlberg Ground Bearings.

The inclusion of the Bower products in the Ahlberg All Bearing Service makes available a single source from which all types of precision bearings, pillow blocks, flange mountings, etc., may be secured.

The 34 branch warehouses of Ahlberg and its associate, Precision Bearings, Inc., of Los Angeles, will handle the nation-wide distribution of the full line.

Each of the branches will maintain a complete factory stock of all standard types and sizes for all manufacturers so that overnight delivery can be made to practically any part of the country. A factory-trained engineer is to be available at all branches to give authoritative engineering assistance and answer technical questions covering the products of all participating manufacturers for either changeover or replacement.

RODNEY S. DURKEE

Recently elected executive vice president of Lane-Wells Company, resigned as comptroller of Socony-Vacuum Oil Company to take up his new duties at Los Angeles. He has a long record of service in the oil industry as vice president and director of Standard Oil Company of New York and as director and treasurer of General Petroleum Corporation.

Standco NO-SMOKE

STANDCO BRAKE LINING

Nothing novel—no bunk—but it gets the job done without scoring brake rims. See page 1940, Composite Catalog.

Standard Brake Lining Co.

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B. M. (SKIP) SCIVALLY, Manager

- Complete Stock of Fishing Tools for any emergency.
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1429 E. Broad St. - Phone 2904-2856
LAKE CHARLES, LA.

Squeaks from the Bull Wheel

The melancholy days have come, the saddest of the year—still too warm for whiskey, not hot enough for beer.

Again!

At least once each year during the last 15 that the present compiler has been collecting Squeaks, the following has been mailed in by an admirer. So again we print it:

Den Dat Will Be Hell!

The new colored preacher had chosen for his subject: "Is There a Hell?"

"Brethren," he said, "de Lawd made the world round like a ball."

"Amen! !" sighed the congregation.

"And de Lawd made two axles for de world to go 'round on, and He put one axle at de North Pole an' one axle at de South Pole."

"Amen!"

"And de Lawd put a lot of oil and grease in de center of de world so as to keep them axles greased and oiled.

"And then a lot of sinnahs dig wells in Texas and steal de Lawd's grease and oil. An' dey dig wells in Oklahoma an' California an' Mexico an' Russia an' Persia an' Pennsylvania an' steal de Lawd's oil and grease!

"An' some day, brethren and sistern, dey will have all de Lawd's oil and grease, an' dem axles is gwine get hot. An' den, dat will be Hell, brethren, dat will be Hell!"

Outsider

"Are you a clockwatcher?"

"No, sir, I never did like inside work; I'm a whistle listener."

"Socialized" Medicine

"So Lillie threw over that young doctor she was going with!"

"Yes, and what do you think? He not only requested her to return his presents but sent her a bill for forty-seven visits."

Maritime Note

"Why do they have knots on the ocean instead of miles?"

"To keep the ocean tide."

Eternal Feminine

"Oh, Dad, I've just discovered that the girl who sits next to me in Bio. has a hat exactly like mine."

"So I suppose you want me to buy a new one?"

"Well, darling, that would be cheaper than changing schools."

Elemental

"Ah, Watson, I see you have on your winter underwear."

"Marvelous, Holmes, marvelous! How did you ever deduce that?"

"You forgot your pants."

Yes and No

"Are you a good student?"

"Yes and no."

"What do you mean?"

"Yes, I am no good."

Literal

Flying over the Bay of Naples, an air pilot turned to his passenger and said: "Have you heard that phrase, 'See Naples and Die'?"

"Yes," said the passenger.

"Well," said the pilot, "take a good look—the propeller's come off."

Accident Report

The track supervisor received the following note from one of his foremen:

"I'm sending the accident report on Casey's foot, which he struck with a spike maul. Now, under 'remarks' do you want mine or Casey's?"

Irresistible

"I've come back to buy that car you showed me yesterday."

"That's fine, I thought you'd be back. Now tell me what was the dominant feature that made you decide to buy this car?"

"My wife."

When Both Ends Meet

"Waiter, look at the ends of this sausage."

"What's wrong with them, sir?"

"They're very close together, aren't they?"

Blissful Ignorance

"I believe I should have at least $50 a week alimony."

"But, madam, your husband only earns $30 a week."

"Well, what's that got to do with it? Doesn't the court pay the alimony?"

Principles Are Principal

When William died suddenly the neighbors were shocked, and a kindly woman proceeded to comfort William's wife by describing his good points.

"He was such a man of principle," said the neighbor.

"And am I not the one to know it?" said the bereaved woman. "Every Saturday night didn't he come home and place his pay envelope in front of me as regular as clockwork? Not a night did he miss all the time we were married.

"Of course, the envelope was always empty, but look at the principle of the thing!"

Crazy Pasture

An old lady was out riding with her son and his wife. Presently they came to a group of buildings surrounded by a high wall.

"What is that, son?" she asked, pointing to the buildings.

"That is the state insane asylum, mother," explained the son.

Next they came to a golf course, adjoining the asylum, which was well populated with the usual Sunday crowd.

"Oh, isn't it nice of them to let the poor crazy people out into the pasture!" exclaimed the old lady. "But they do act queer, don't they?"

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